Mining CONGRESS JOURNAL

NOVEMBER 1944

PHILCO IS READY TO REDUCE YOUR POST-WAR BATTERY COSTS

THE NEW PHILCO "THIRTY" *Gives 30% Longer Life*

Storage battery purchases made from now on, are essentially a post-war investment. So be sure to keep posted on this sensational post-war Philco Battery development—the new Philco "Thirty" that gives 30% longer life! Here, at last, is a really revolutionary new long-life construction—employing a brand new principle of FABRICATED INSULATION!* It's available now in certain types and limited quantities. And as rapidly as war time restrictions are eased, Philco will make it possible for every mine operator to share in the new economy and more efficient operation of this great new battery. Write today for full information.

**Patent Applied for*

PHILCO CORPORATION, STORAGE BATTERY DIVISION
TRENTON 7, NEW JERSEY

Specify

PHILCO
MINE BATTERIES

FOR 50 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

Mining Congress Journal

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COVER: Diesel locomotive spots its train of air-dump cars at the Oliver Iron Mining Company's crushing-screening plant at Hibbing, Minn.

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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress.

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THE AMERICAN MINING CONGRESS
309 MUNSEY BLDG., WASHINGTON 4, D. C.

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ABC

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GOODMAN TANDEM LOCOMOTIVES

This motor, 400 horsepower tandem unit will completely replace heavy underground locos. Outstanding features of this powerful and

- higher horsepower form possible with single operation of some two or
- semi-electro pneumatic control with automatic transition switch
- straight air brakes, withdrawing hand brake
- roller type motor axle bearings
- roller type journal bearings
- transverse equalizers
- air sanders
- separately ventilated motors
- may be arranged for opposite or permanent trolley operation

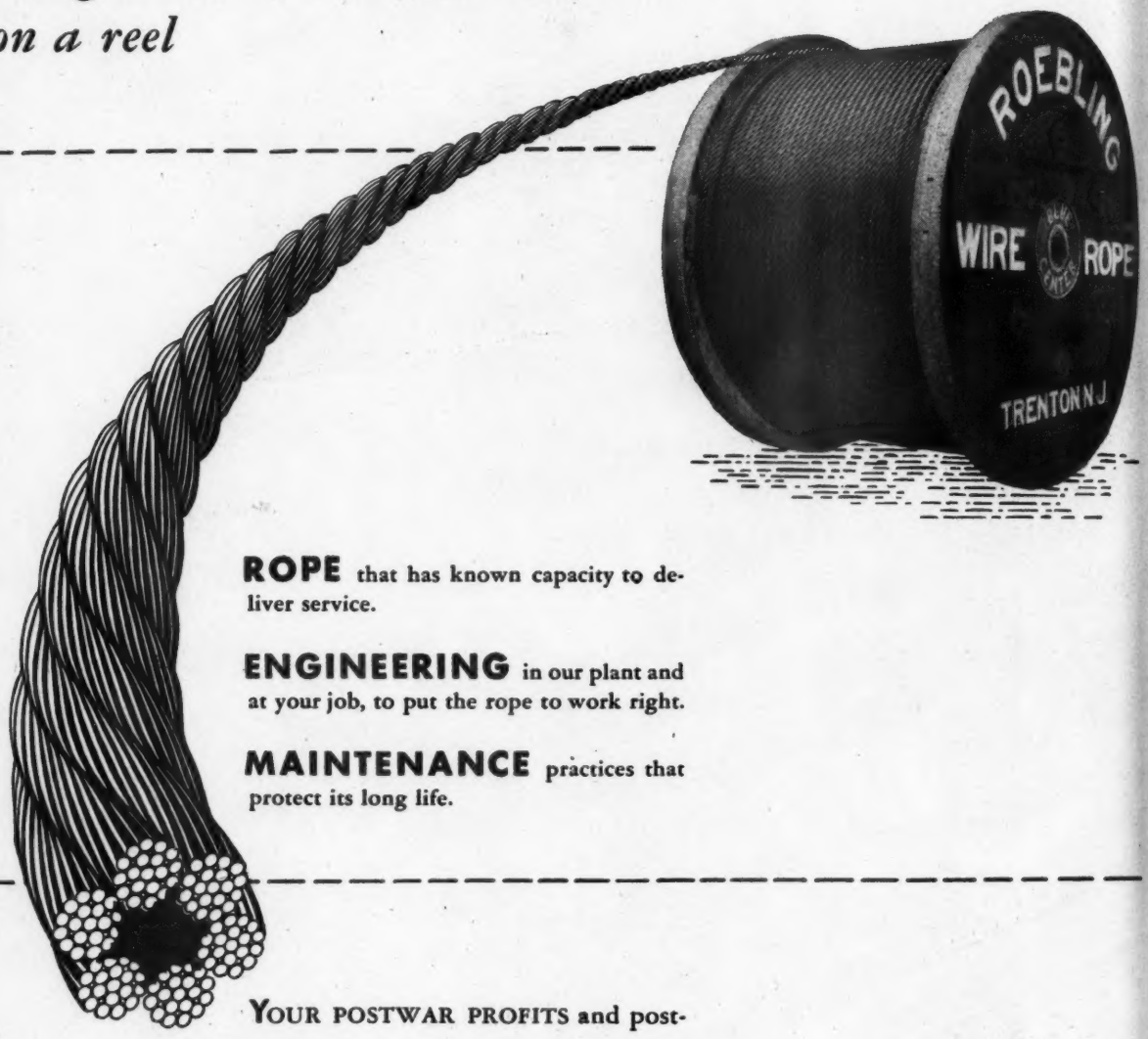
GOODMAN MANUFACTURING COMPANY

or Heavy Main Line Loads

ARMY E NAVY

Y HALSTED STREET AT 48TH • CHICAGO, ILLINOIS

When you say, **"Make it ROEBLING**
'Blue Center'" *you buy a lot of things that can't be wound on a reel*



ROPE that has known capacity to deliver service.

ENGINEERING in our plant and at your job, to put the rope to work right.

MAINTENANCE practices that protect its long life.

YOUR POSTWAR PROFITS and postwar jobs will depend in part on operating rope-rigged equipment at lowest possible cost. You can leave that part to Roebling.

JOHN A. ROEBLING'S SONS COMPANY, Trenton 2, New Jersey
Branches and Warehouses in Principal Cities

ROEBLING

PACEMAKER IN WIRE PRODUCTS

WIRE ROPE AND STRAND • FITTINGS • COLD ROLLED STRIP • SUSPENSION BRIDGES AND CABLES • AIRCORD, SWAGED TERMINALS AND ASSEMBLIES • AERIAL WIRE ROPE SYSTEMS ELECTRICAL WIRES AND CABLES • ROUND AND SHAPED WIRE • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS WIRE CLOTH AND NETTING

ENGINEERING TEAM WORK BUILDS BETTER BELTS

A conveyor belt system—whether intended for a mine, a quarry or any other service—is necessarily a "custom" job. It must be designed to meet specific and specialized operating conditions.

The belt itself can be successfully produced only through the teamwork of three separate technical staffs . . . first, those who lay out and operate the property; second, the engineers who specialize in the design and manufacture of the mechanical conveying equipment; finally, the rubber belting engineers.

Obviously the work of the last group must be based on the designs and specifications of the other two.

Because of careful and close coordination of all three skills, there are thousands of successful installations where U. S. Rubber Conveyor Belts have proved their economy and efficiency . . . The belts are right not only in materials and construction, but also in design for the particular service for which they are intended.

ENGINEERED RUBBER CONVEYOR BELTS

SERVING THROUGH SCIENCE

Fundamental to the design of any U. S. Rubber Conveyor Belt is the original planning done by the *Mining* or *Plant Engineer*. He determines the quantity and the distances of the materials to be conveyed.

Another determining factor is the type of mechanical equipment installed by the *Equipment Designer and manufacturer*. His specifications control the size, type and strength of the belting to be used.

Finally, the *Rubber Belting Engineer* is responsible for scientifically combining the right rubber compounds and fabrics into a conveyor belt that exactly meets the requirements of the installation.

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

UNITED STATES RUBBER COMPANY

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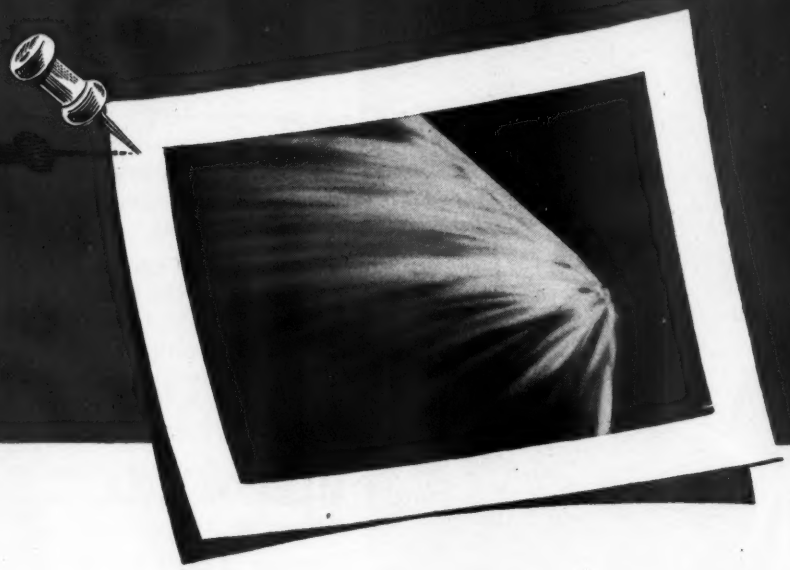
SNAPSHOT of an explosion



HERE IS A STORY OF AN EXPLOSION—as told by the explosive itself. The narrow, white streak at the right is the path of detonation, flashing through the explosive at about 250 miles a minute! The feathery haze is a photographic record of white-hot gases bursting outward at tremendous pressures as high as a million pounds to the square inch.

Facts such as these are recorded, studied, and analyzed by Hercules scientists. Each day scores of research projects are carried on to broaden the knowledge and understanding of explosives. It is through constant, intelligent research that we endeavor to help you and thus benefit ourselves.

---------- *HERCULES EXPLOSIVES* -----

HERCULES POWDER COMPANY
INCORPORATED

For FAST, Low-Cost Drilling, CP-60 MOTORdrifter

FOR drilling in hard, seamy or ravelly formations, for tunneling from Jumbo drill carriages—there is no better drifter than the CP-60 MOTORdrifter. It will do a fast, low-cost drilling job anywhere.

The CP Motorfeed is powered by the compact and dependable rotary type motor. Its sensitive control enables the operator to maintain correct position for maximum drilling and quick reverse for changing steel. Write for further details or arrange for a demonstration of the CP-60 MOTORdrifter under your own conditions. You will like its drilling speed, low air consumption, low maintenance, easy handling.

There are three models of fast-drilling CP MOTOR-drifters: the 3" CP-50, the 3½" CP-60, and the 4" CP-70. There is a parallel line of CP Hand-Feed Drifters.

★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
(Hicycle...Universal)
ROCK DRILLS

CHICAGO PNEUMATIC
TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

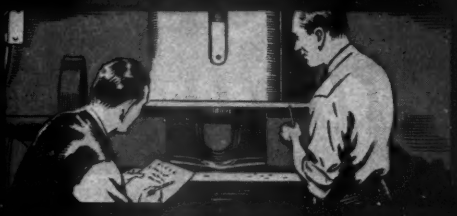
★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

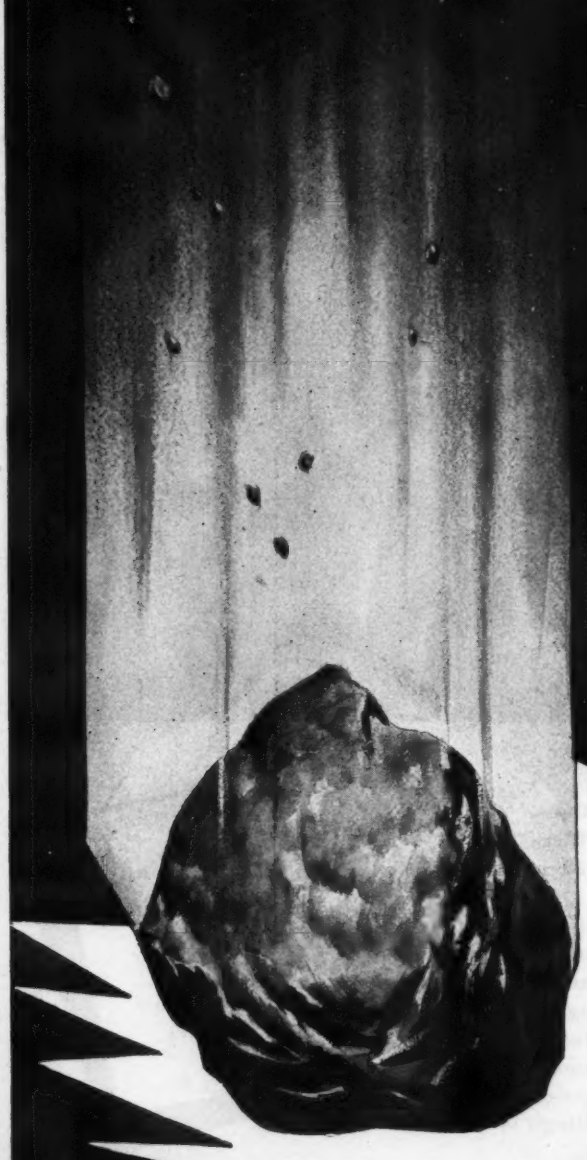
WALLOPALOOZER

That's our unofficial way of referring to the "impact test" we give U.S. Royal Cords and Cables. A 27½ pound steel hammer, with a 1 inch diameter impact foot, falling 7 inches... repeatedly smacks the cable for as many as two thousand times without cable failure.

Not only that, but we also punish "U. S." Royal Cable with heat, cold, compression, stretch and bend—so that when we get through we know we've got a cable that will take all you can give it, and *more*, in actual use.

That is why Mine Operators and Locomotive Designers can specify U. S. Royal Mining Machine and Locomotive Cables with *absolute* confidence whenever they want a balanced cable construction, flexibility, high dielectric strength, smoothness of finish, and long trouble-free service.





THE NEW
U. S. ROYAL
Safety Tested
MINING MACHINE AND
LOCOMOTIVE CABLES

SERVING THROUGH SCIENCE

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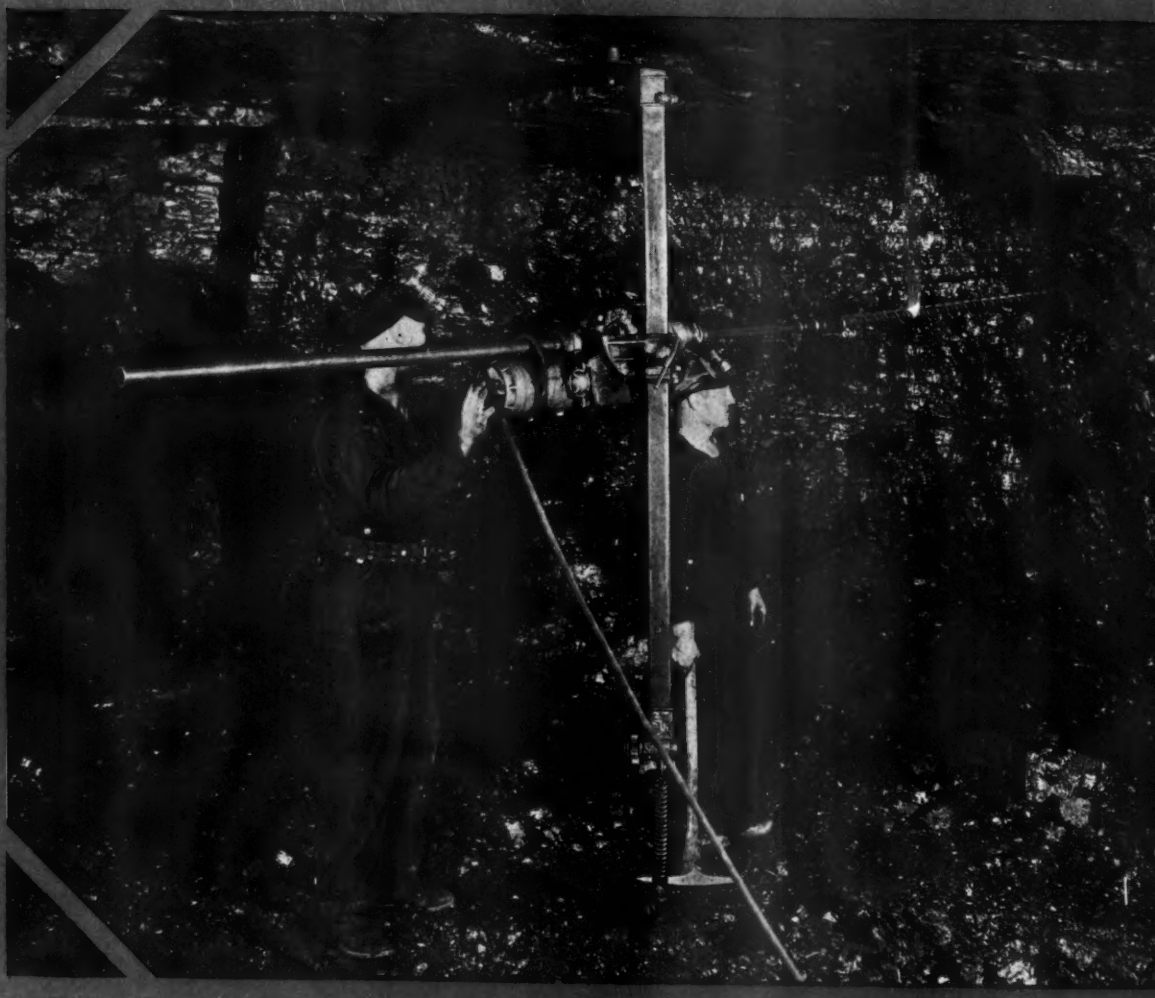
JEFFREY

Mechanical Mine Equipment Since 1880

From an old Jeffrey album—
an early model hand drill

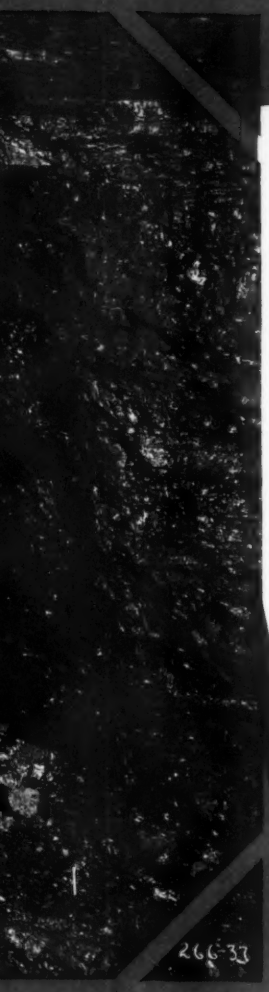
BUY WAR BONDS



Showing the Progress of

JEFFREY

COAL DRILLING EQUIPMENT



JEFFREY PROGRESS

Coal was drilled and shot down long before modern haulage and loading machines were developed.

The old hand-propelled drill on the first page is an early model Jeffrey drill. Directly below on this spread is illustrated one of the early type Jeffrey drills in operation.

In contrast with these note the compact, high-powered Jeffrey A-6 post drill (left) now commonly used in mechanical mining. This unit is portable, comparatively light in weight, capable of high speeds and more holes in less time.

Also lightweight Hand Held drills and drilling machines (track-mounted) with multiple drills.

Consult Jeffrey on your drilling needs.

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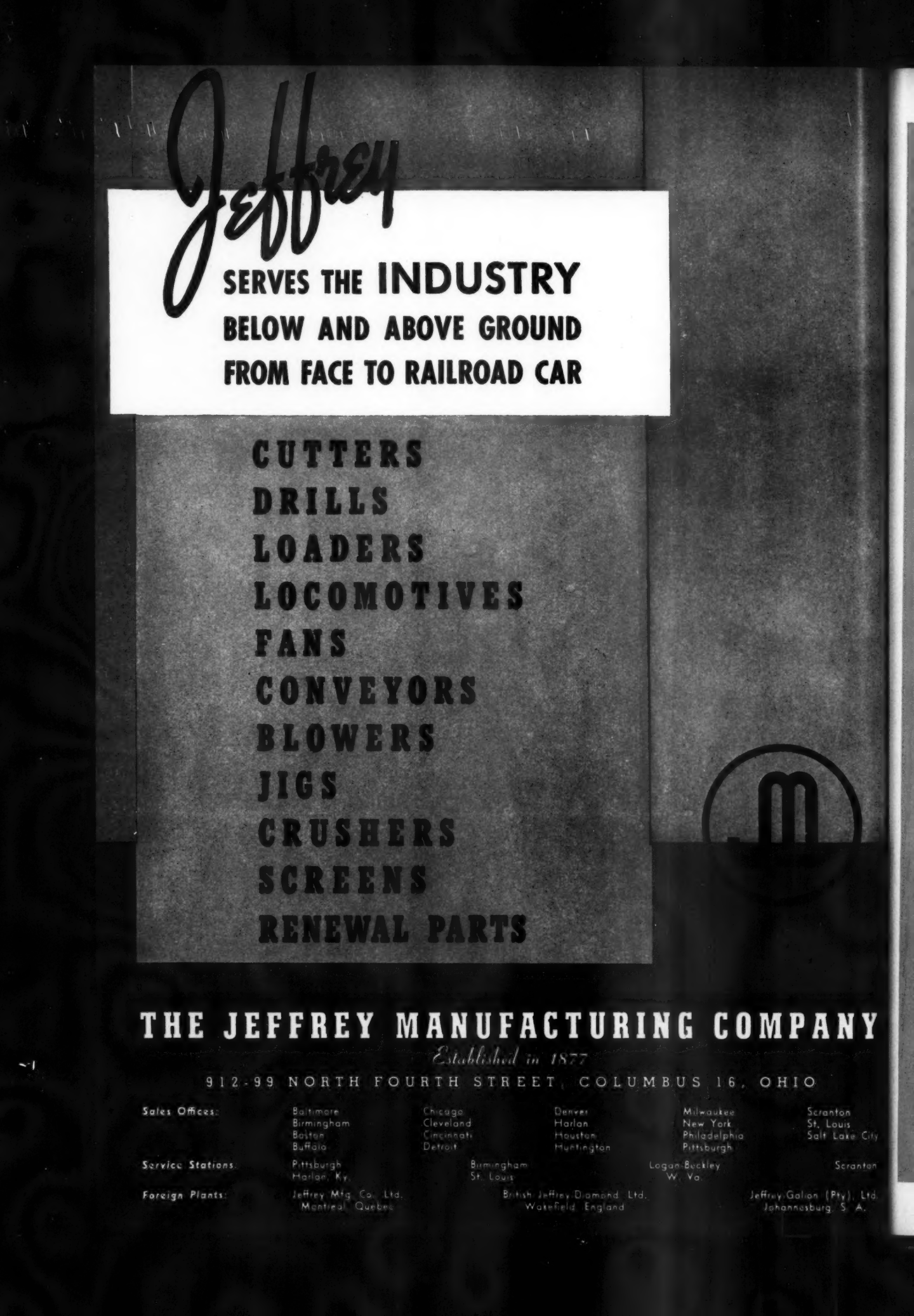
Jeffrey
SERVES THE INDUSTRY
BELOW AND ABOVE GROUND
FROM FACE TO RAILROAD CAR
CUTTERS
DRILLS
LOADERS
LOCOMOTIVES
FANS
CONVEYORS
BLOWERS
JIGS
CRUSHERS
SCREENS
RENEWAL PARTS
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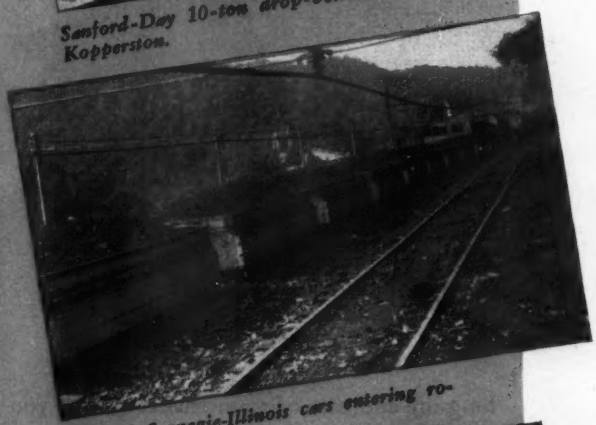
Established in 1877
912-99 NORTH FOURTH STREET, COLUMBUS 16, OHIO
Sales Offices: Baltimore, Birmingham, Boston, Buffalo, Chicago, Cleveland, Cincinnati, Detroit, Denver, Harlan, Houston, Huntington, Milwaukee, New York, Philadelphia, Pittsburgh, Scranton, St. Louis, Salt Lake City
Service Stations: Pittsburgh, Harlan, Ky., Birmingham, St. Louis, Logan-Beckley, W. Va., Scranton
Foreign Plants: Jeffrey Mfg. Co. Ltd., Montreal, Quebec; British Jeffrey Diamond Ltd., Wakefield, England; Jeffrey-Galion (Pty.) Ltd., Johannesburg, S. A.

Stepping up Production

KEEPING DOWN COSTS AT KOPPERSTON, W. VA.

Sanford-Day 10-ton drop-bottom cars at Kopperston.



Trip of Carnegie-Illinois cars entering rotary dump at Kopperston.

Modern car loader in operation at Kopperston.

Timken Bearing Equipped mine cars help at this modern mine property—one of the largest producers in the entire bituminous industry.

Car equipment on Timken Bearings comprises 10-ton drop-bottom cars built by Sanford-Day Iron Works, Knoxville, Tenn., and 5-ton conventional cars built by Carnegie-Illinois Steel Corporation.

The 10-ton drop-bottom cars haul the coal from the upper seam to a large bin inside the mine. A conveyor then carries the coal down an inside slope to lower seam level. Main haulage of coal from both seams to the rotary dump is handled in Carnegie-Illinois cars by 20-ton Westinghouse locomotives equipped with Timken Bearings.

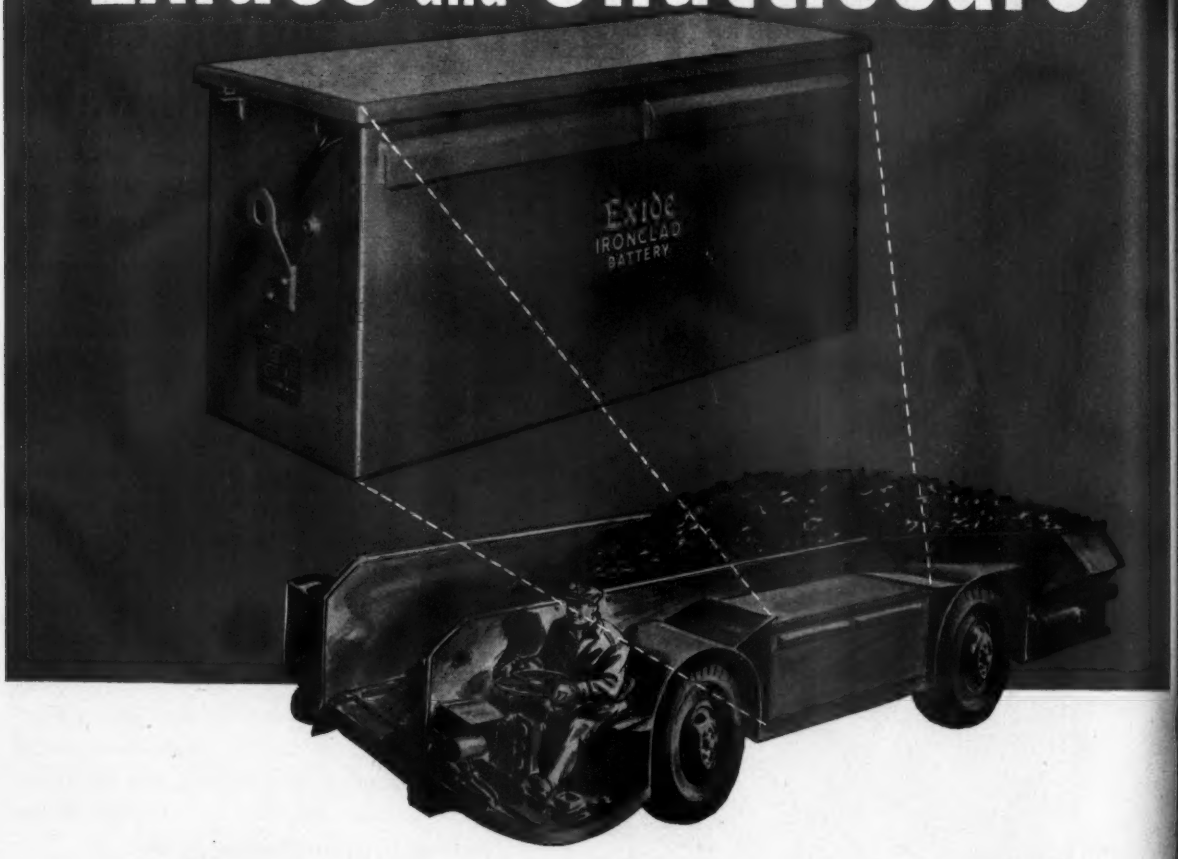
More mine cars have gone on Timken Bearings during the last 20 years than on all other makes of anti-friction bearings combined — over 400,000. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
TAPERED ROLLER BEARINGS

Miners' homes at Kopperston, W. Va., one of the most modern mining communities in the country.

Tapered Roller
TIMKEN BEARING
EQUIPPED

Exides and Shuttlecars



the combination that keeps coal moving FAST!

The speedy, flexible operation of shuttlecars shortens gathering time, keeps mechanical loaders busier, and tonnage figures climb. When Exide Batteries provide the motive power, shuttlecar performance is at its best.

Exide Batteries have the high voltage needed to maintain uniform speed throughout the day. And their ample reserves are sufficient to meet every demand made upon them. You can always count on Exides for dependability, long-life and ease of maintenance. When you buy an Exide, you *Buy to Last.*

If you wish more detailed information, or have a special battery maintenance problem, don't hesitate to write to Exide. We want you to profit from the long-life that is built into every Exide Battery.

ARMY E NAVY

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

THE SHOVEL WITH A BOARDING HOUSE REACH!"

It stacks away a lot of yardage in high places

To master a specific type of material handling, MARION developed the long-reach, high-lift shovel shown below. It is one of the most powerful machines for its size ever built.

It strips deep, tough, rock filled overburden from the working face of coal seams, lode veins, clay deposits and rock beds and disposes of it on top of high spoil banks and does the job speedily and at low cost.

The exceptional mobility of this BIG, little MARION has been proven under all pit conditions.

MARION engineers will gladly tackle your material handling problem.

It Pays To Modernize With MARIONS

THE MARION STEAM SHOVEL COMPANY • MARION, OHIO

ANOTHER **MARION** ACHIEVEMENT

CRANES • PULL-SHOVELS
CLAMSHELLS • SHOVELS
DRAGLINES • WALKERS

For Every Material Handling Job

3/4 cu. yd. to 35 cu. yds.

BUY WAR BONDS

KEEPING 'EM BUSY

There are two things about this picture to warm the hearts of miningmen. One is the sight of an important mine in full war production. The other is the sight of husky Mack trucks doing their part to keep every shovel working "all out." Each of these Macks, with their 30-ton load capacity, can move 2,160 tons of earth every 24 hours! No wonder mine operators depend so much on Mack. They know its bed-rock toughness, its down-to-earth operating economy—and its 44-year-old reputation for being *more* truck, ready and able to take more punishment, and do more work. They know from experience what "Built like a Mack" means . . . and what a satisfaction it is to have Macks on the job.

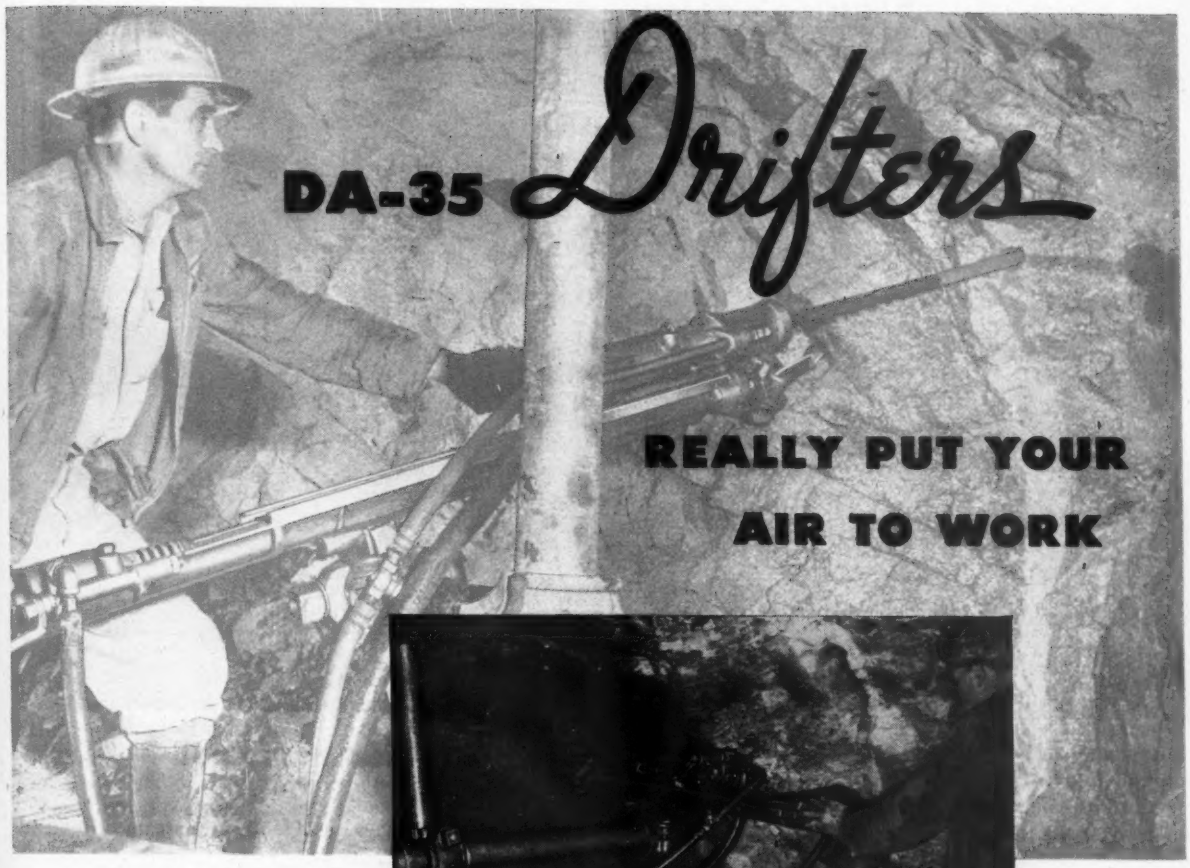
Mack

TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

Mack Trucks, Inc., Empire State Building, New York, N. Y.
Factories at Allentown, Pa.; Plainfield, N. J.

IF YOU'VE GOT A MACK, YOU'RE LUCKY . . . IF YOU PLAN TO GET ONE, YOU'RE WISE!

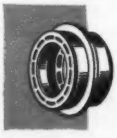


Note the convenient location of the Power-Feed throttle.

Set up a DA-35 Drifter underground. Fasten to it a one-inch air hose and a half-inch water hose. Crack the throttle, collar the hole, then open the DA-35 up wide and watch it eat into the rock. You will see record-breaking drilling speed—speed and durability that recently enabled five DA-35 Drifters to advance a 10-foot bore 1879 feet in one month. You will see performance from a medium-weight, 3½-inch-bore machine that is comparable to that of many, much heavier, 4-inch-bore drifters. Yes, performance that enabled two experienced mining men to report as follows:

"The DA-35 Power-Feed Drifter outdrills our other machines by three holes nearly every shift."

"The DA-35 outdrills our other machines as much as four inches in a 24-inch run."



The highly efficient valving of this outstanding rock drill squeezes every ounce of power out of compressed air and really puts it to work.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

5-463

COMPRESSORS ▪ TURBO BLOWERS ▪ ROCK DRILLS ▪ AIR TOOLS ▪ OIL AND GAS ENGINES ▪ CONDENSERS ▪ CENTRIFUGAL PUMPS

with anthracite's most Powerful Electric Hoist

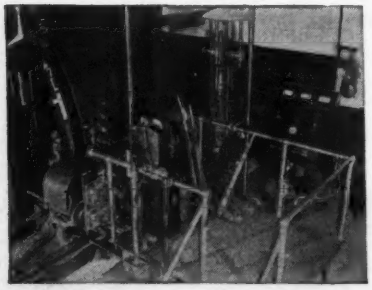
. . . 93 trips per hour to surface 420 tons of coal—*that's real production!* And that's the everyday record for this Westinghouse powered and controlled mine hoist—the most powerful in the anthracite field.

It takes a lot of horsepower to do a job like this—1750 in fact—supplied by this powerful pedestal-type, wound-rotor Westinghouse induction motor. Operating on 2200-volt, 3-phase, 25 cycle power, the motor drives a large gear unit, connected to a conical drum carrying the 1700 ft. of 1⅝" steel cable used to raise and lower the cages.

This hoist replaces an old 30 x 60 steam unit—and provides faster and more economical hoisting.

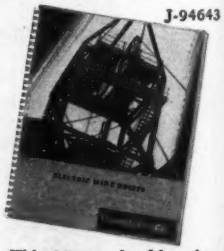
Conditions surrounding this installation were such that the purchase of low-cost, highly efficient alternating current equipment was recommended by Westinghouse engineers after a study of the requirements.

This is just another example of the ability of Westinghouse to solve the toughest mining problems. For a simple solution to your complex electrical problems, call your nearest Westinghouse Office. Westinghouse Electric & Mfg. Co., P.O. Box 868, Pittsburgh 30, Pa.



CONTROL STATION—Primary hoist control is furnished by electro-pneumatically operated contactors. Secondary control gives 10-point acceleration through adjustable relays of the definite time-limit inductive type, operating on the last seven contactors. The first three points are under manual control. An electro-pneumatically operated air-brake contactor provides for reversal on the 2200-volt circuit.

J-94643



This 90-page booklet gives complete information on how to select electric hoist equipment to meet your special requirements. Write for free copy of B-3055 today.

Westinghouse
PLANTS IN 25 CITIES... OFFICES EVERYWHERE

ELECTRICAL EQUIPMENT FOR THE MINING INDUSTRY

Mining CONGRESS JOURNAL

Published for the Entire Mining Industry by The American Mining Congress

S. A. TRENGOVE, Editor

Volume 30 NOVEMBER, 1944 Number 11

Alaska—Back to the Indians?

PETITIONS filed by Indians of southeastern Alaska seek exclusive occupancy rights of large areas of land and exclusive fishing rights—by virtue of aboriginal or ancestral occupancy. While primarily concerned with fishing rights, the claims are based upon a theory which could easily be applied to mining claims and rights. In fact, a further petition of the Juneau Thlinget tribe seeks all ground in Juneau and the great Alaska Juneau mine.

Where reservations have already been established, the effect of prohibiting the acquisition of any further mining claims or rights in the adjacent reserved area is to reduce the value of existing claims even though these are excluded from the reservation. Mining operations may be retarded measurably or even stopped if additional ground is not available for mineral extraction or other related purposes. The whole structure of the mining, lumbering and fishing industries of Alaska as well as the entire commerce of the Pacific Northwest is involved in the situation.

All Alaska, deeply aroused over the matter, has raised its voice in rightful protest and hopes to convince Secretary Ickes of the great harm which such privileges can do if established. Article VI of the Treaty of Cession, took title from Russia:

> "free and unencumbered by any reservations, privileges, franchises, grants or possessions by any associated companies, whether corporate or incorporate, Russian or any other, or by any parties, except merely private property holders."

A statement by Igloo Number Six, Pioneers of Alaska, is especially illuminating:

> "The Indians of Alaska have been well treated, not only by the pioneer white settlers who have always respected their actual rights, but by the Government also, and we defy anyone to show the contrary. * * *
>
> "We are persuaded from our long acquaintance and association with the Indians, that they did not initiate any such claims—it was done for them by outsiders, and if they are granted, it will mean that the Territory will be ruined for both whites and Indians."

The Alaska Miners Association has stated:

> " * * * while the mining to date has been confined largely to gold, platinum and coal, it is generally conceded that there are great potential mineral resources in the Territory which could be and will undoubtedly be developed *if the mining laws are left undisturbed and the large amounts of capital required can be attracted to their development.* The Interior Department has called attention more than once to the fact that there are indications of many valuable strategic and much required minerals in the Territory which probably exist in commercial quantities, including quicksilver, antimony, nickel, chrome, copper, tin and other minerals."

The American Mining Congress (which has joined in the current protest) has consistently recommended retention of the existing and long-established mining land laws on the Public Domain and opposed further and unnecessary withdrawal of potential mineral lands from development. The Honorable Richard Hanna is now hearing the case at Seattle. That this new threat to free enterprise will be quickly and effectively removed, is the hope not only of Alaskan miners but of miners everywhere in America.

Pent-Up Demands for Coal

THE desire for new, more efficient and decorative things is strong in the public mind. Harry M. Vawter, Director, Bituminous Coal Institute, noted this recently, predicting that post-war homes would have automatic heat, warm floors, low fuel costs and smokeless chimneys. The coal industry is ready to fulfill these wishes as restrictions are lifted. Better heating equipment has been developed during the last decade than during the previous two thousand years. We should begin using this new equipment as soon as possible. The National Fuel Efficiency Program has indicated not only the effects of doing a better job with present facilities but also the importance of having better coal-burning equipment during the next national emergency.

A recent Fairmont Coal Bureau bulletin states that thousands of steam plants in the country are worn out, with countless others obsolete. Fifty percent of the steam plants can't burn any type of coal efficiently; 40 percent can utilize only a restricted range of coals; 10 percent can burn a wide range of coals satisfactorily and efficiently. Plants of the future should be built with full combustion engineering assistance (notably missing in the past construction) and should be able to employ the full range of coals locally available. We possess the engineering knowledge to provide the most efficient, economical steam plants in the world—and if such plants are built, the fuel used *will be coal.*

We believe that consumer demands for better plants will be high and that the public will want the new domestic heating units in large numbers. At the moment, these two needs can't be filled, but when they can be, two important results can obtain: (1) Great new strength will accrue to the coal industry, by virtue of coal becoming the most all-around satisfactory fuel and (2) The Nation will gain a very real asset against future war emergencies because we will be avoiding the present unfortunate fuel wastes. Demands for coal, held in check today for lack of proper burning equipment, will be much more readily met in future times of stress if we adhere to our newly developed knowledge.

The New Praco Plant

Modern Coal Preparation Plant of Alabama By-Products Corporation Incorporates Many Special Features

THE Alabama By-Products Corporation operates six coal mines in the vicinity of Birmingham, Ala., in the Mary Lee and Black Creek seams of bituminous coal. At Tarrant City, Ala., it also operates four batteries of Koppers coke ovens which produce more than 600,000 tons of coke per year. The coke plant serves a widespread market for metallurgical and foundry coke besides marketing the resulting by-product chemicals.

On July 28, 1943, the preparation plant at Praco was completely destroyed by fire. For a time operations were conducted on a reduced production basis with a temporary tipple. Plans for a new plant were begun immediately, however, and construction soon started on an entirely new modern tipple and preparation plant. The new plant commenced operations on June 6, 1944.

The Mary Lee seam coal has good coking qualities and after proper treatment in a washery for the removal of its extraneous ash and sulphur content, possesses satisfactory sulphur and ash analyses. Waste material is higher than the average found in most other bituminous seams of coal and this condition, plus the fact that most of the coal is obtained by mechanized underground mining, results in a high percentage of washery reject material.

Previous washery operations at the Praco mine produced a plus ½-in. coal which was sold to railroads and industrial plants as well as the minus ½-in. coal used in the by-products ovens. The former washery served three mines which the company designated as No. 7, No. 7½ and No. 10. During construction of the new plant No. 10 mine was connected underground with No. 7 and No. 7½ worked out, concentrating all work in No. 7.

The Praco No. 7 mine is a slope operation with an 8,000-ft. slope measured from the base of the seam to the outcrop; it pitches down on an average grade of 6½ percent. Coal from the underground operations is gathered at a loading station at the bottom of this slope. At the mouth of the mine, a three-track landing sidetrack yard accommodates both loaded and empty trips. The lower half of the slope has a single track with a double track in the upper half. Twenty-four two-ton capacity wooden mine cars are hoisted to the surface in each trip. Two separate electric hoists are arranged, one ahead of the other, to handle the trips from the mines. The forward one of these is a Hardie-Tynes Mfg. Co. 7-ft. drum hoist, driven by a 2,300-volt, 575 r.p.m., 800-hp. Westinghouse motor. The other is the Vulcan Iron Works hoist equipped with a 10-ft.-3-in. drum and driven by a 2,300-volt, 475 r.p.m., 850-hp. Westinghouse motor. The forward hoist operates at a rope speed of 1,600 ft. per minute and the rear hoist operates at a rope speed of 1,700 ft. per minute. Both are well protected with safety devices. A trip handled by one hoist reaches the surface by way of one of the double tracks and the trip handled by the other hoist reaches the surface by way of the other double track. Excellent modern facilities have been installed at the surface for the safe handling of both loaded and empty trips.

Major Objectives Set for the New Plant

The five major objectives accomplished by the final plant design may be listed as follows:

1. Improvement in the uniformity of the washed coal products, particularly with regard to the coal sent to the coke ovens. Accomplishment of this end required not only the purchase and installation of the best in the way of coal washing facilities, but also required the blending of the run-of-mine coal received from the various working faces; the ash and sulphur produced at the several working faces represent a variable which can only be compensated for by physical blending.

A four-compartment blending bin has been so placed that the coal coming from the mine can be directed to the proper one of the four compartments by the operator at the rotary dump. After being sorted and stored in this manner, the coal is discharged from each of these four bins simultaneously, or from any one of the bins as desired, with measured speed, to the gathering conveyor which delivers the coal to the treatment plant.

2. The second objective involves in-

dependent operating shifts for the washery and the mine. It was desired to gain maximum economy and flexibility for these two basic operating units so that one shift of plant operations could handle two shifts of mine operations or two shifts of plant operations could handle three shifts from the mine. This feature has been made successful by installing a two-car rotary dump for discharging the cars coupled in the train at the unloading point and by providing a high capacity dump facility for delivering the coal from the dumping stations to the blending bins; the blending bin is of sufficient capacity to permit it also to serve as a storage bin.

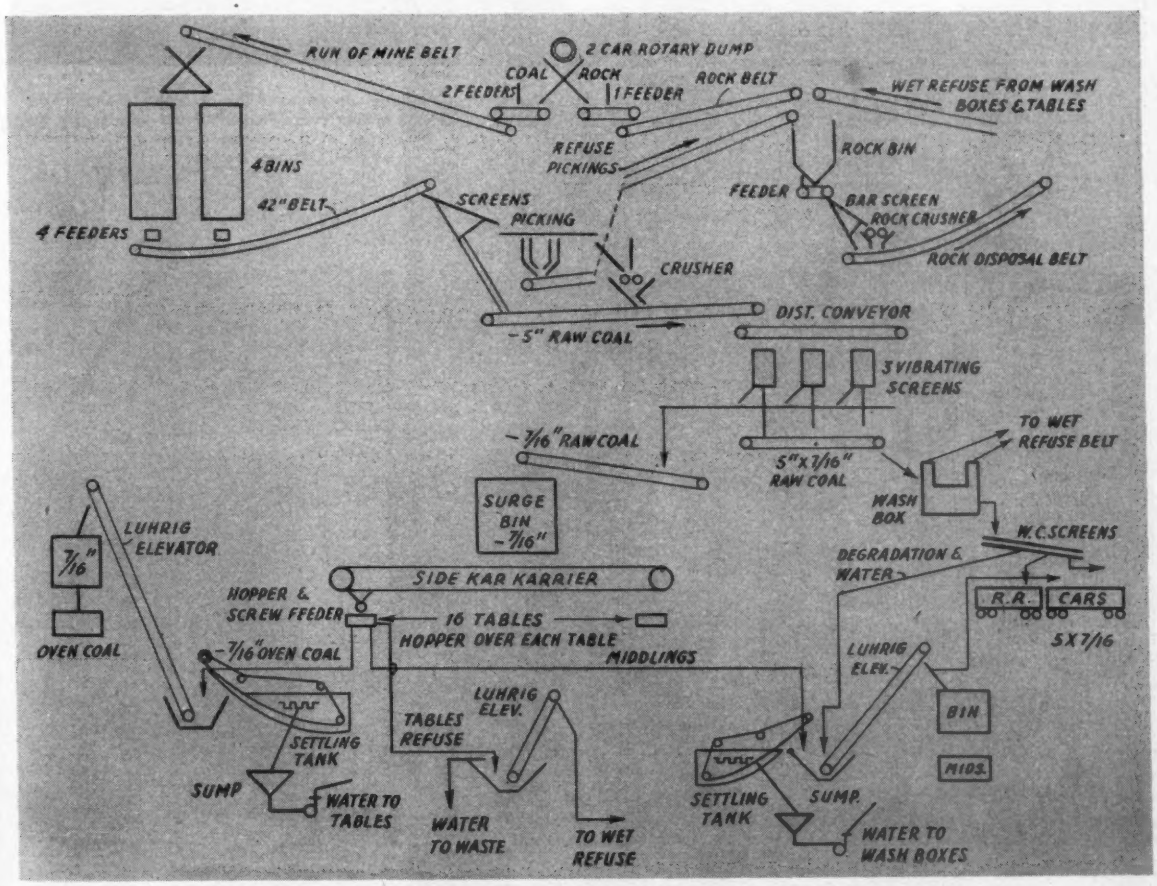
3. The third objective concerns the economical disposal of mine and cleaning plant rejects. These rejects come from four places, viz.; mine rock, which is hauled from the mine in separate cars, which are separately discharged into a mine rock hopper at the dumping station; picked refuse, which comes from the picking tables at the raw coal screening and crushing station; the washery rejects, separated from the coal at the washbox; and, washery rejects separated from the fine coal at the table plant. The plant has been laid out so that conveyor distances are at a minimum for the delivery of refuse from each of these four places to a central point where the refuse bin is located. This bin discharges to a 24-in. refuse conveyor, which carries the waste material to a disposal point.

4. Water is somewhat scarce in this vicinity at certain seasons of the year and the plant must be as economical of water as possible; and, since an effluent from the plant has been found desirable it must be kept at exceedingly small volume. A closed water circuit is therefore essential. The clarification of washery water to make it suitable for recirculation is accomplished by means of drag settling tanks of special design operating in conjunction with drainage type elevators for handling the settled coal solids discharged from the drag tanks.

5. The final objective calls for the most economical layout possible from the standpoint of personnel requirements and horsepower demand.

Plant Operation and Equipment

Coal from the mine is received at the two-car Link-Belt rotary dump, which is designed to operate at four dumping cycles per minute. Cars are dumped without uncoupling and are hauled to the dump by rope haulage. The dump has a 30 hp. electric motor and is designed to hold cars of varying sizes by means of chains which wrap around the cars automatically and hold them when dump is operated. It is planned to install larger cars gradually as present cars wear out. A Streeter-Amet self-recording track scale is located ahead of the dump and 60 ft. ahead of the landing point for the loaded trip. Located on level track, this scale records the weight of the loaded mine cars while they are in motion. The dump hopper is fitted with motor-driven fly-gates (one beneath each of the two cars in the dump) so that the operator can simultaneously discharge a car loaded with mine rock to the mine rock hopper and a car loaded with coal to the coal hopper. Apron feeders beneath the dump hoppers deliver mine rock or run-of-mine coal to their proper conveyors.



The plant has been laid out with a view to highest possible economies in personnel requirements and horsepower demand

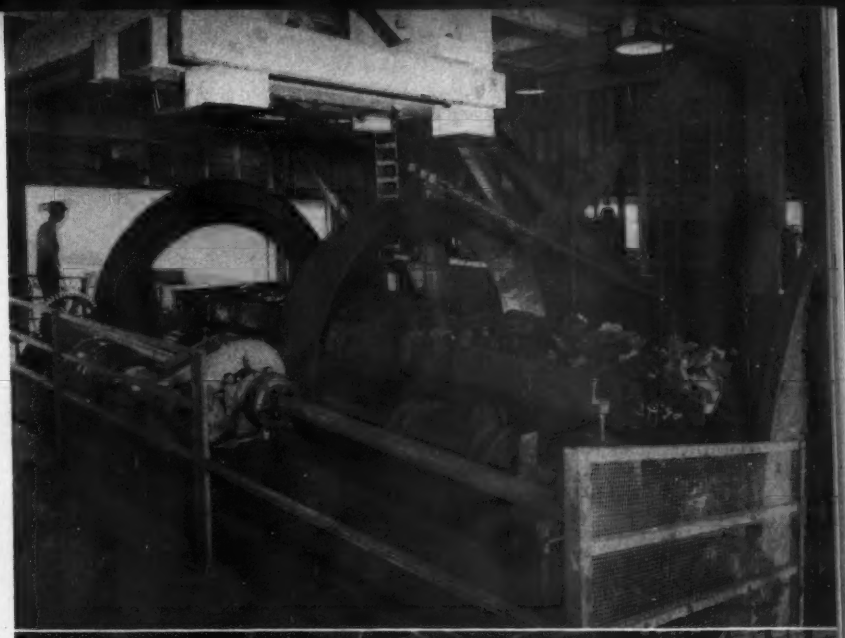
Settling tanks and elevators. The jig washery is on the right. The clarified water is collected in a sump and pumped to a standpipe

War restrictions made the extensive use of concrete and timber necessary. Over a million board feet of timber was used in the construction. Nearly all of it received preservative treatment by the "Osmose" process

The coal from the two picking operations passes into a Jeffrey single roll crusher with 5-in. opening

The Side-Kar Karrier has been set up to assure a continuous feed of coal to each of the 16 Deister-Overstrom tables

The two-car Link-Belt rotary dump operates at four dumping cycles per minute



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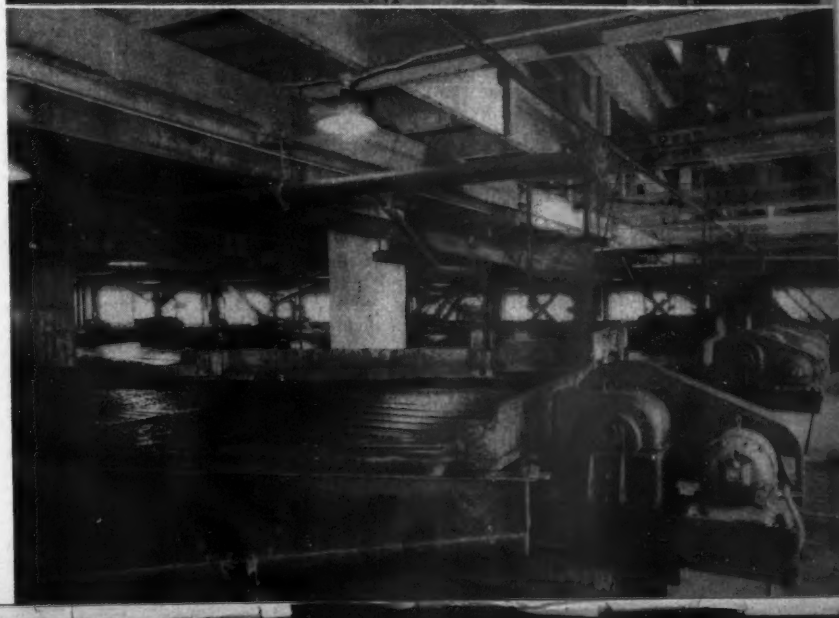
The jigs in use in the district employ deep beds. These are often 18-in. deep

★

Sixteen diagonal deck tables are provided to clean the metallurgical coal. Each has a feed rate of 9 to 10 tons per hour

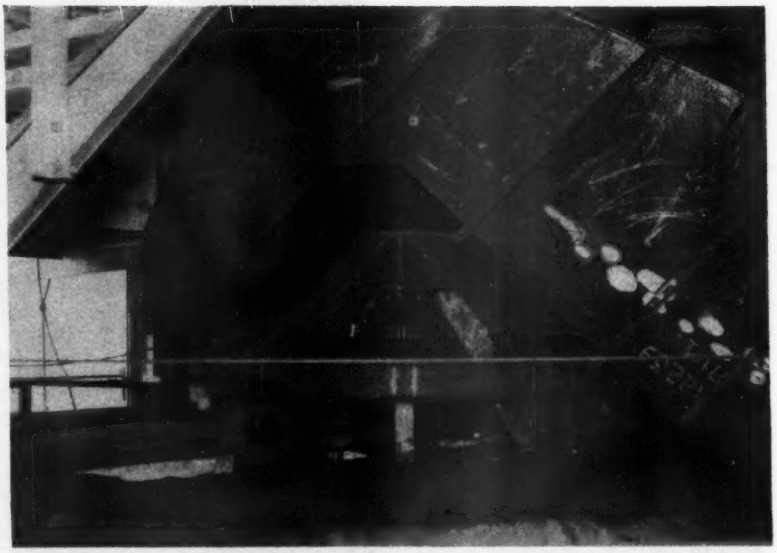


The mine rock is delivered to the refuse bin by means of a 42-in. refuse conveyor and the run-of-mine is delivered direct to the blending bin at the rate of 750 tons per hour. This raw coal conveyor is 48 in. wide and is fitted at the discharge end with a swivel chute so that the coal can be selectively delivered to one of the four compartments of the blending bin. The blending and storage bin consists of four concrete silos, each 45 ft. high and 18 ft. 6 in. in inside diameter; combined capacity is 1,000 tons of mine run coal. This capacity maintains normal mine production in case of delay in the plant and permits uniform feed to the plant when delays or fluctuations occur in the mine output. The bins are fitted at the four discharge outlet points with apron feeders, driven through P.I.V. variable speed transmissions. Because of the flexible methods used in feeding these storage bins, the coal coming from each bin differs in quality than that coming from the other bins. Each feeder is therefore delivering its kind of coal to the belt conveyor leading to the plant, thus providing for a nearly uniform mixture being continuously delivered.

A 42-in. inclined belt conveyor delivers the blended run-of-mine coal to the screening, picking and crushing station. The sizes which pass over 8-in. round holes are diverted to one side of the table, where a picker removes the coal from the rock. A major portion of the material over 8 in. in size is waste and, after passing the picking table, moves on to a conveyor which delivers it to the refuse bin. Material passing through 8-in. round holes and over 3-in. round holes goes to the opposite side of the picking table, where rock and wood particles are removed. The coal from these two operations then passes into a Jeffrey single-roll crusher, with 5-in. opening. It then joins the minus 3-in. material which has been by-passed around the crusher and goes to a 42-in. belt for delivery to the washery.

At the washery, the coal is pre-sized over vibrated screens which are capable of making the separation in sizes ranging from ¼ in. to ⅝ in. The undersize of this operation is delivered by means of a scraper conveyor to a 100-ton storage bin for distribution to 16 Deister Overstrom tables. Even distribution of the feed to the tables is accomplished by means of a Sidekar-Karrier conveyor. This conveyor is a continuous bucket carrier operating in a horizontal plane and automatically discharging the coal to each hopper ahead of each table to insure a continuous feed of coal to each table. The small hoppers installed above each table have a capacity of 1,500 lbs. each. Previous experience has shown that best performance is secured for the preparation of the finer sizes of Mary Lee coal from tables. The tables are of the diagonal deck design, each 16 ft. long, with a feed rate of 9 to 10 tons per hour, producing 7½ to 8½ tons of clean coal per hour.

The oversize coal from the screens is gathered and water-borne in a sluice to a Link-Belt No. 6044 air-pulsated wash box. This is a six-cell jig with two compartments; the first compartment has two cells, each 7 ft. wide and 3 ft. long. The major portion of the heavy gravity refuse is removed to the refuse bin from this point by means of a bucket elevator which has a capacity of over 100 tons per hour. The four cells of the secondary compartment of the jig are each 8 ft. wide by 3 ft. 3 in. long and this compartment is also fitted with an elevator having a capacity of over 100 tons per hour. Here are removed the fine heavy gravity refuse, the "floaters" and some heavy bone with coal laminations. In jigging Mary Lee coal, it is necessary to carry deeper slate beds than when treating most other coal. Baum jigs employed in this district often work with beds 18 in. deep. Total depth from the jig screen plate to the overflow lip is 26 in., so that much higher air pressures are required than when working with other types of coal. The jigs have a circulating pump with a capacity of 5,000 g.p.m. and a blower with a capacity of 3,350 cu. ft. per minute at 3 lb. per sq. in. pressure. These capacities are required because of the absence of fines in the feed to the jig.



The swivel chute at the discharge end of the raw coal conveyor permits selective delivery to one of the four blending compartments

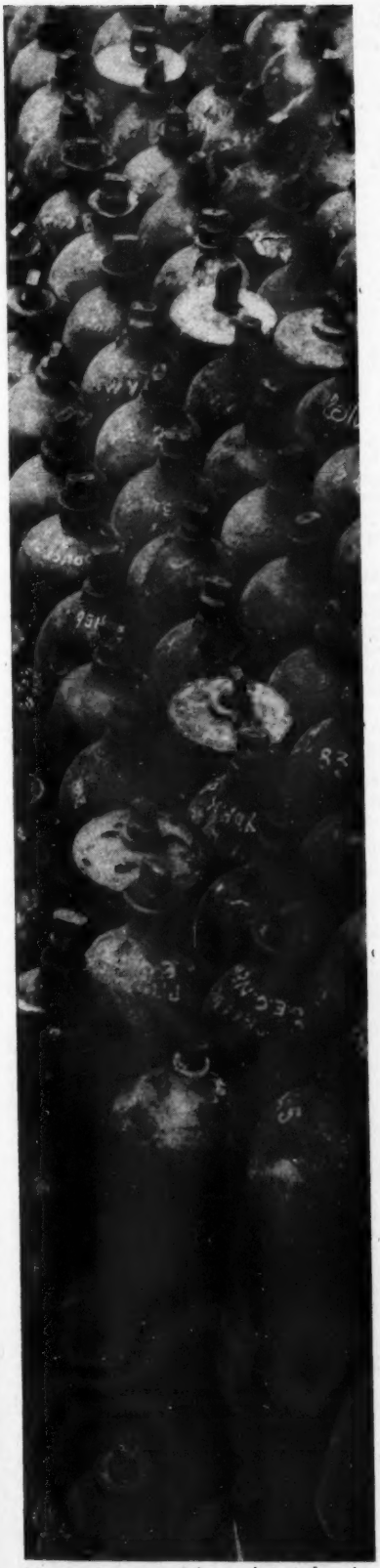
The washed coal from the air-pulsated jig, along with the wash water, is then flumed to a classifying and dewatering screen of the flexible hanger type. Provisions are made so that this screen can produce two or even three sizes of washed coal for loading on separate tracks. Each of the three sizes can also be modified so that it contains a portion of the other two, as desired, and also any portion of the coal from this screen (and any size) can be conveyed over the track to a house-coal bin for local domestic use. The screen is operated at a speed of 150 r.p.m. with a stroke of 4-in. and has an upper deck with 80 sq. ft. of 1-in. perforated plates and a lower deck of 120 sq. ft. of 3/32-in. diameter perforated stainless steel plates. The wash water and the fine coal passes through the above screen and is flumed to the oven coal drag settling tank.

In the meantime, the rejects from the oven-coal table plant are conveyed direct to the refuse bin and a further separation is made on the tables between the oven coal and the middlings which are flumed separately to the oven-coal drag settling tank and the middlings drag settling tank, respectively. Each of the two tanks is equipped with a drag conveyor composed of two strands of heavy bar-link chains which delivers the settled solids to the oven-coal and middlings-coal Luhrig type draining elevator. The drag conveyor is equipped with 10-in. channel flights 8 ft. long and operates at a speed of 4 ft. per minute. Operating at depth of 10 ft. below the overflow weirs, it provides for a quiet body of water. The settled fines are conveyed up an inclined surface and discharge into the Luhrig elevator above the water line in the sump. The elevators deliver oven coal and middlings coal into separate bins, each of which is fitted at its discharge opening with two-way car-loading chutes so that continued loading can be accomplished to cars while the cars are in motion.

The clarified water, which overflows the two drag tanks, is collected in a pump sump and pumped to a standpipe which supplies a static head of water for the air-pulsated jig and furnishes water to the table plant. All make-up water required enters the system at the table plant, and, since the table plant requirements for clear water are in excess of the amount of make-up water needed to replace the water leaving the plant with the washed coal (loaded into cars) an effluent is necessary.

Most of the motors used throughout the plant are Westinghouse 440-volt, CS line-start units. General Electric Cabinetrol units, located at different points in the plant, are used for starting all motors. Three General Electric 500 k.v.a. single-phase Spirakore transformers are used for stepping down from 2,300 volts to 440 volts.

One of the most significant construction features of this plant is the economical use of steel. War restrictions made it necessary to utilize timber and concrete construction wherever possible. Over a million board feet of southern short-leaf pine were utilized in the construction, practically all of which was treated with "Osmose" prior to installation.



Mercury is prepared for market at the mine

The New Idria Decision

Mining Industry's Contention that Percentage Depletion be Computed on Gross Sales of the First Marketable Product Upheld. Depletion also Allowed on Ore Mined from Old Dumps

By ARTHUR H. KENT
Attorney-at-Law
San Francisco, Calif.

THE recent decision of the Circuit Court of Appeals for the Ninth Circuit in *New Idria Quicksilver Mining Company v. Commissioner* and three related cases, decided September 22, 1944, is of great interest and importance to the mining industry. Herein the Court, reversing the Tax Court of the United States which had sustained the Commissioner, held that the taxpayers, which were engaged in the mining and treatment of cinnabar ores, were entitled to use as gross income from the property the total amount received from gross sales of flasked quicksilver. The Commissioner had determined deficiencies based upon the deduction from such gross income of the costs of transporting and furnacing the crushed ores and the condensing, cleaning, and flasking of the quicksilver, together with an assumed profit determined by applying to total profits from quicksilver sales the percentage which the cost of each operation bore to the total cost of all operations involved.

The decision of the court on this point is of great significance in several respects. The court might have rested its decision solely upon section 124 of the Revenue Act of 1943, i.e., the gross income amendment, which added section 114 (b) (4) to the Code and retroactively amended prior acts back through the Revenue Act of 1932. While that amendment in terms referred specifically, in the case of quicksilver ores, only to furnacing, the minor processes of condensing, cleaning, and flasking could reasonably be held to be included in the term "furnacing," as being merely the completion thereof and incidental thereto.

The court, however, did not confine its decision in any such fashion. Rather, it declared that it was satisfied on the basis of much consideration of the history of that amendment, that it was merely declaratory of the original intention of Congress that the processes to be excepted in arriving at the first marketable product from quicksilver ores should include the furnacing of the same. The court stated that it could find no basis for legally distinguishing the beneficiation which takes place in the rotary furnace and condensing system from the preceding processes of mining and crushing. It concluded by declaring that the interpretation of the Treasury regulation by the Commissioner and the Tax Court was not in harmony with the statutes and the intention of the regulation prior to the amendment.

The court in this decision has recognized and adopted the principle, in the case of metalliferous ores which do not have an established or representative field price, that no gross income is realized within the meaning of the statute until the point is reached where by suitable metallurgical treatment a commercially marketable product has been obtained. This principle is equally applicable to such processes as the cyanidation and precipitation of gold and silver ores, the leaching of copper and other ores, the crystallization of potash, and similar processes. The *New Idria* decision therefore constitutes a clear judicial vindication of the interpretation of the statute and regulations which representatives of the industry since 1940 have in vain urged upon the Bureau of Internal Revenue to be the proper one. It also vindicates the contention made by Senators Edwin C. Johnson and John Thomas in the Senate that the gross income amendment conferred no new substantive benefits upon the mining industry but merely clarified the statute by declaring the original legislative intent and policy in specific and unambiguous language. Finally it represents an unmistakable judicial reverse to administrative action wearing the guise of interpretation but in reality derogatory of congressional policy and intent.

The Circuit Court of Appeals also reversed the Tax Court upon another issue which should be of considerable interest and importance to the industry. The New Idria Company had claimed percentage depletion on income derived from mining dumps on its land. The ore in these dumps had been mined and milled years previously by the taxpayer's predecessor in title, but by reason of the improved furnacing process, it was possible profitably to work some of the ore in the dumps. The dumps had always been a part of the land and no depletion had ever been claimed. The Commissioner and the Tax Court denied any depletion deduction for percentage in reliance upon *Atlas Milling Company v. Jones* (C. C. A. 10), 115 Fed. (2d) 61. The appellate court reversed and held the case to be controlled by its own prior decision in *Kennedy Mining and Milling Company v. Commissioner* (C. C. A. 9), 125 Fed. (2d) 399, quoting the statement from its opinion in the *Kennedy* case that the tailings were ores, and also that they were ores from the taxpayer's mine, just as were newly mined ores. The court further declared that the taxpayer enjoyed the same rights with respect to depletion as its predecessor in interest. The decision on this point is important as evidencing a judicial tendency to confine within reasonable bounds the application of the doctrine of the *Atlas* case.

Mr. Robert W. Searls of San Francisco was counsel for the taxpayers throughout this very successful litigation.

There follows the full text of the *New Idria* decision.

New Idria Quicksilver Mining Company, et al.

vs.

Commissioner of Internal Revenue.

Before GARRECHT, MATHEWS and STEPHENS, Circuit Judges.

GARRECHT, Circuit Judge:

Four petitions for review have been consolidated for hearing here. Three of the petitioners are owners and operators of a cinnabar mine or mines. One is a lessee and operator of such mines. In their respective returns of income and excess profits taxes for the years 1939, 1940 and 1941, each petitioner, relying on the statutory definition of gross income, computed percentage depletion on the total amount received from gross sales of mercury (or quicksilver) flasked, and claimed 15 percent of such gross income as a deduction. The Commissioner notified each that "allowable depletion, based on 15 percent of the gross income from the property as defined in law and regulations, has been determined" in a lesser amount than the taxpayer had computed it, resulting in determination of a deficiency. In each case, the Tax Court sustained the Commissioner's method of computing percentage depletion by deducting from gross income the cost of transporting, furnacing, condensing, cleaning, etc., in amounts agreed upon together with an assumed profit which was determined by applying to the total profits from sales of quicksilver the percentage which the cost of each operation bore to the total cost of all operations involved in getting the quicksilver to market.

The questions for review are whether petitioners correctly computed percentage depletion in rendering their income tax returns for the years in question; whether the petitioner New Idria Quicksilver Mining Company was entitled to deduct percentage depletion on ore mined from certain dumps on its property; and whether petitioner Oat Mill Mining Company was entitled to deduct as an operating expense a certain service charge deposit required by a power company serving electric energy.

At these mines, with the exception of the metal obtained from the dumps on the New Idria Quicksilver Mining Company property, the mercury was obtained from crude cinnabar ore brought to the surface from underground mining operations. The ore in the mine is broken down by blasting, and then sorted. Only the cinnabar ore is hauled to the surface to be crushed into particles of about two inches. The crushed cinnabar ore is carried to furnaces on the property, where the ore is heated to a temperature of 1,200 Fahrenheit. The heat disintegrates the ore and drives the quicksilver off in vapors. The quicksilver as released in vapors is drawn by means of suction into a condenser system. The buckets which collect the condensed mercury are emptied on tables, where slack lime is mixed with the product to cleanse it and also to free the quicksilver. After this final step, the mercury is flasked for market.

Experiments have been made over periods of time with different methods of gravity and flotation in order to concentrate the cinnabar ore before furnacing but they were not successful. The evidence is undisputed that there are no mills in the United States which purchase the crude cinnabar ore and there is no market for it.

Section 114(b) (4), Internal Revenue Code, contains the statutory measure of depletion of quicksilver mines:

"§ 114. Basis for depreciation and depletion.

* * *

(b) Basis for depletion.

* * *

(4) Percentage depletion for coal and metal mines and sulphur. The allowance for depletion under Section 23(m) shall be, in the case of coal mines, 5 per centum, in the case of metal mines, 15 per centum, and, in the case of sulphur mines or deposits, 23 per centum, of the *gross income from the property* during the taxable year, excluding from such gross income an amount equal to any rents or royalties paid or incurred by the taxpayer in respect of the property. Such allowance shall not exceed 50 per centum of the net income of the taxpayer (computed without allowance for depletion) from the property. * * * " [Italics our own.]

Treasury regulations 103 interpret Section 114(b) (4) of the Internal Revenue Code:

"Sec. 19.23(m)-1. Depletion of mines, oil and gas wells, other natural deposits, and timber; depreciation of improvements.—

* * *

When used in these sections (19.23(m)-1 to 19.23(m)-28, inclusive) covering depletion and depreciation—

* * *

(f) 'Gross income from the property' as used in section 114(b) (3) and (4) and sections 19.23 (m)-1 to 19.23(m)-28, inclusive, means the amount for which the taxpayer sells the crude mineral product of the property in the immediate vicinity of the mine or well, but, if the product is transported or processed (other than by the processes excepted below) before sale, it means the representative market or field price (as of the date of sale) of crude mineral product of like kind and grade before such transporting or processing. If there is no such representative market or field price (as of the date of sale), then there shall be used in lieu thereof the representative market or field price of the first marketable product resulting from any process or processes (or, if the product in its crude state is merely transported, the price for which sold) minus the costs and proportionate profits attributable to the transportation and the processes not listed below. The processes excepted are as follows:

* * *

(4) In the case of lead, zinc, copper, gold or silver ores and ores which are not customarily sold in the form of the crude mineral product—crushing, concentrating (by gravity or flotation), and *other processes to the extent to which they do not beneficiate the product in greater degree*

(in relation to the crude mineral product on the one hand and the refined product on the other) *than crushing and concentrating* (by gravity or flotation)." [Italics our own.]

Neither the statute nor the regulations mention cinnabar ore, mercury or quicksilver. The petitioners contend that the Regulations intend there shall be no deduction from gross income for the cost of such processes as would bring a non-salable crude mineral to the first stage at which it can be sold. There is no market for the crude cinnabar ore; out of every ton of crude cinnabar ore transported to the surface, 1,995 pounds are rock having no value whatever. No salable product is produced by crushing; concentration has proved uneconomical and is never used; the beneficiation which takes place in the rotary furnace and condensing system is not legally distinguishable from the preceding processes of mining and crushing. The petitioners contend the correct basis for computing depletion is the gross sales of the mercury in flasks as this is the first marketable product. The Tax Court relies strongly on *Commissioner of Internal Revenue* v. *Winslow*, 113 F. (2d) 418 (C.C.A. 1), which fails to support the Government's position.

Much consideration has been devoted to the history of what Congress intended in enacting Section 114(b)(4). We submit that Congress by the 1943 Revenue Act, which is made retroactive, made clear its original intention that the processes to be excepted in arriving at the first marketable product from quicksilver ores should include the furnacing of the same.

Section 124, Revenue Act of 1943, provides:

"(a) In General.—So much of section 114(b)(4) (relating to percentage depletion for certain minerals) as precedes the second sentence thereof is amended to read as follows:

* * *

(c) Definition of Gross Income from Property.—Section 114(b)(4) is amended by adding at the end thereof the following:

'(B) Definition of Gross Income from Property.—As used in this paragraph the term "gross income from the property" means the gross income from mining. The term "mining," as used herein, shall be considered to include not merely the extraction of the ores or minerals from the ground but also the ordinary treatment processes normally applied by mine owners and operators in order to obtain the commercially marketable mineral product or products. The term "ordinary treatment processes" as used herein, shall include the following: * * * and (iv) in the case of lead, zinc, copper, gold, silver, or fluorspar ores, potash, and ores which are not customarily sold in the form of the crude mineral product—crushing, grinding, and beneficiation by concentration (gravity, flotation, amalgamation, electrostatic, or magnetic), cyanidation, leaching, crystallization, precipitation (but not including as an ordinary treatment process electrolytic deposition, roasting, thermal and electric smelting, or refining), *or by substantially equivalent processes or combination of processes used in the separation or extraction of the product or products from the ore, including the furnacing of quicksilver ores.*'" [Italics our own.]

We believe the interpretation of the regulation by the Commissioner and the Tax Court is not in harmony with the statutes and the intention of the regulation.

The second question for determination is whether the New Idria Quicksilver Mining Company was entitled to claim percentage depletion on income derived from mining dumps on its land. The ore in the dumps has been milled years previously but with the improved furnacing process, it was possible to salvage some of the ore. The dumps had always been a part of the land and no depletion had ever been claimed. This court in *Commissioner of Internal Revenue* v. *Kennedy Mining and Milling Co.*, 125 F. (2d) 399 (C.C.A. 9) said that "tailings * * * were ores. They were ores from the taxpayer's mine, just as were the newly mined ores." The Tax Court failed to distinguish the instant case and the Kennedy case. There is no legal distinction between the rights of the successor in interest and the rights of the original owner with respect to depletion claimed. See also *Consolidated Collar, Gould & Savage Mining Company* v. *Commissioner of Internal Revenue*, C.C.A. 9, 133 F. (2d) 440.

The final question before this court is whether the Oat Hill Mine Company was entitled to deduct in its tax return the payment made to the Pacific Gas and Electric Company for power service. Tax Regulations entitle the taxpayer to deduct from gross income expenditures incurred in operating its property which do not represent the acquisition of any capital item. The expenditure made by the Oat Hill Mine, Inc., was an advance payment so the power company would install a transmission line to the petitioner's property. The evidence was that the mine had a prospective three-year operation. The Oat Hill Mine itself was merely a sublessee of the property. It is our opinion that the operating expense here should have been prorated over the probable life of the operation.

Reversed accordingly.

(Endorsed): Opinion. Filed September 22, 1944. Paul P. O'Brien, clerk.

New Idria mine, Idria, Calif.
The mercury mining operation, including final processing, is necessarily completed upon the mining property or in the immediate vicinity

Packaged fuel, made near the ultimate consumer, is not designed for bulk handling so that special methods are employed to move it

Packaged Fuel

A Technical and Economic Study of a Typical American Business Effort to Sell Something Better Than that Formerly Used

By V. F. PARRY

Senior Fuel Technologist
U. S. Bureau of Mines
Golden, Colo.

MOST packaged-fuel plants are relatively small and were first designed for use by retail dealers as a means to improve fine coal resulting from breakage in shipment and handling.

Packaged fuel, made near the ultimate consumer, is not designed for bulk handling, and special methods are employed to move it. The large square blocks, wrapped in paper covers, are not amenable to the rough handling experienced by bulk coal, and they invite orderly stacking in warehouses by hand or automatic machinery. Although the bonding of packaged-fuel cubes is much weaker than that of fuel briquets, they will withstand the required handling before ignition in the fuel bed, and if the coal has coking properties, a fuel cube cokes to make a porous fuel bed much like that obtained with lump coking coal. It is probable that noncoking fine coal cannot be used to manufacture satisfactory packaged fuel, whereas anthracite is made into satisfactory fuel briquets.

Although cube-shaped briquets made with asphalt binder can be handled as bulk coal, most packaged-fuel cubes are made with starch binder and will not withstand bulk handling or open storage.

A retail dealer handling several carloads of fuel briquets will find at times he has considerable fine abraded material resulting from breakage and degradation. This is considered a loss equal to the cost of the same weight of whole briquets, correcting for value of the fine coal. By refluxing this material and pressing into cubes, followed by wrapping, this dealer might be able to sell the packaged fuel for a higher price per ton than briquets.

Packaged fuel has proved to be a popular domestic fuel in many cities. Apparently satisfaction is obtained when good, solid cubes are delivered in clean, dry packages, and considerable expansion of possible market is indicated under these circumstances, even at premium prices over lump fuel delivered in bulk.

Abstracted from Bureau of Mines Report of Investigations 3757, June, 1944.

RELATION BETWEEN CAPACITY, PRODUCTION, NUMBER OF PLANTS AND TOTAL PRODUCTION, 1940[1]

Plants having annual capacity of less than the following net tons each	2,500	5,000	10,000	15,000	25,000	40,000	100,000
Cumulative number of plants	42[2]	62	87	93	100	105	106
Cumulative percentage of total number of plants	40[2]	59	82	88	94	99	100
Cumulative percentage of total production[3]	6	17	38	48	63	80-85	100
Cumulative average percentage of capacity operated[4]	29[2]	32	32	33	38	38	40
Cumulative percentage of installed capacity	8	22	47	58	68	..	..

[1] Estimated from data in Bureau of Mines Minerals Yearbook, 1940, and from interviews in the field.
[2] Estimated.
[3] Total production 1940=284,513 net tons.
[4] Total capacity of packaged-fuel plants estimated to be about 770,000 net tons per year.

Development of Packaged-Fuel Industry

Coal blocks made from slack coal for domestic use were introduced in 1928 to 1930, when certain fuel merchants recognized the need for better preparation of yard slack for domestic use. In 1928, one Omaha company compressed slack coal mixed with asphalt binder into large, rectangular blocks weighing about 10 lb., and in 1930 another plant made 3½-lb blocks using cement binder. Some of the large blocks were wrapped in paper.

In 1930, a company in Cleveland perfected a small mechanical cubing machine and operated it there, using Portland cement as a binder. They sold machines of this type in 1930 and 1931, and in 1932 developed a hand-operated wrapping machine that was first used by a coal cubing company for manufacture of packaged fuel in Detroit.

Soon after the purchase of the cubing machine, the coal cubing company developed its own methods for making packaged fuel and after much experimentation devised a special cubing machine from a heavy-duty toggle-type brick press and a wrapping machine converted from a commercial bread wrapper.

A company in Omaha pioneered in making cube-shaped briquets and packaged-fuel cubes with asphalt binder. The first blocks made were marketed locally in 1928, and in 1929 several thousand tons were sold. Some of the cubes made in 1928 were sold as packages wrapped in printed paper. This plant was destroyed by fire in 1929, but in the spring of 1930 another plant was built by the company at Council Bluffs, Iowa, where 7- and 3½-lb blocks were made on a heavy-duty brick press. It continued in operation until 1938 and was then removed to Minneapolis.

During 1931, a company in Jackson, Mich., made banking blocks from slack coal, using portland cement for binder. These blocks were recommended for holding fire overnight. In 1939 this company developed an automatic machine for making cubes by a vibrating and compressive action and employing a binder made from off-grade wheat, corn, or rye. This company has developed an automatic wrapping machine.

A new process for making cubes was introduced commercially in 1938, and five plants used the machine in 1941. It employs a rotating camshaft to create pressure on the cubes.

The principal impulse behind the development of packaged fuel was the desire of retail coal dealers for a higher-priced outlet for Pocahontas slack coal and yard screenings from domestic lump. Pocahontas coal is friable, and approximately 20 percent breakage occurs during shipment and handling of the coal in the yard. Domestic lump sells for about $9 to $10.50 per ton in the Central States, whereas Pocahontas industrial slack and domestic stoker fuel sell for about $5 to $7.50 per ton. Owing to the cleanliness and uniformity of good packaged fuel, its value in most cities is $0.50 to $1 higher than that of competing lump fuel. If packaged fuel can be made at a total manufacturing cost of $3.50 to $4, retail coal dealers should be able to convert yard screenings profitably as long as these price relationships are maintained.

The packaged-fuel industry began to assume important proportions in 1935, when production rose to about 25,000 tons. Since that time the output has increased steadily to reach a peak of about 285,000 tons in 1940, when war conditions curtailed production.

The Bureau of Mines started a study of packaged fuel, but it was soon observed on visits to several plants that *binders were not the primary cause of troubles in the packaged-fuel industry* because both low- and high-grade packaged fuels were being made with the same binder and coal in the same kind of plant. The real trouble appeared to be insufficient drying, since good packages usually were made in plants that dried them adequately, and in these plants there were no complaints of starch binder. One important fact soon appeared: Operators who were harassed with competition and other troubles were underdrying their product in their effort to speed up production.

Most of the troubles experienced appeared to be related to methods and extent of drying, the technique of mixing the binder with coal, cost of manufacture, moisture in coal, and the quality of labor employed.

Operations in Making Packaged Fuel

The sequence in making, wrapping, and drying packaged fuel, using starch binder, is about as follows:

1. Slack coal having a top size of ½- to ¾-in. is gathered from the yard or purchased from the mine or lake docks. This fuel may have variable moisture content, depending on its exposure and other factors, and the moisture content affects the later operations of fluxing with starch, cubing, and drying. If much water accompanies the coal, especially in processes employing steam for fluxing or dextrinizing the starch in the coal-starch mixture, the final mixture for cubing may have too much water and good cubes cannot be made.

2. Starch is added to the mixture hopper, by volume measurement, in the form of corn or wheat flour. The amount added varies from about 10 to 20 lb. per ton of coal, and the operator learns the proportions best-suited for his coal and methods.

3. Water is added by volume measurement, and some judgment is required to find the optimum amount required to make a good mixture for cubing. The operator feels the mixture by compressing a handful and learns to detect the tackiness best-suited for his machines and conditions. Five to 10 percent of total water by weight is usually required, depending on the original condition of the coal.

4. The mixture is fluxed until the tackiness appears to be suitable. This operation requires a few minutes, but the time varies with the quantity of coal in the mixing hopper, the water content of the coal, and the amount of starch used. Each operator works

out a suitable mixing schedule to fit his conditions.

Some operators are experimenting with live steam jetted into the mixing hopper to heat and flux the coal-starch mixture. This operation adds moisture and heat by condensation of the steam.

5. The coal-starch mixture is fed to the cubing machine by mechanical means and measured in the press by volume. The distribution of an equal quantity to each cell in the cubing machine is an important feature of a cubing machine. The mixture is compressed, and the cubes are discharged mechanically to the automatic wrapper or to a table near the man operating the semiautomatic wrapper.

6. In the larger plants the cubes are wrapped in machines similar to those that wrap bread or food packages. The smaller, semiautomatic wrappers require a man to place the cubes in the machine, which folds the paper around the cubes, and the operator attaches the tape. He then places the wrapped package on the drying rack. Recently one company has added a device which operates the foot pedal of the semiautomatic wrapper with compressed air. Paper suitable for wrapping cubes is 50-lb. unglazed kraft, which permits the passage of vapor.

7. The packages are dried in any feasible drying room which will remove about 60 percent of the moisture in a reasonable time. This usually amounts to about 9 oz. loss in weight of a 10-lb. package and requires about 15 hours in a room fed with dry air at 120 degrees F. If packages are dried completely they will keep or store indefinitely, but if enough moisture is not removed, the starch and sometimes the glue on the tape will mold, and the packages are not satisfactory.

Analysis of Costs in Typical Plants

Four types of packaged-fuel plants are considered in analyzing the costs of manufacture:

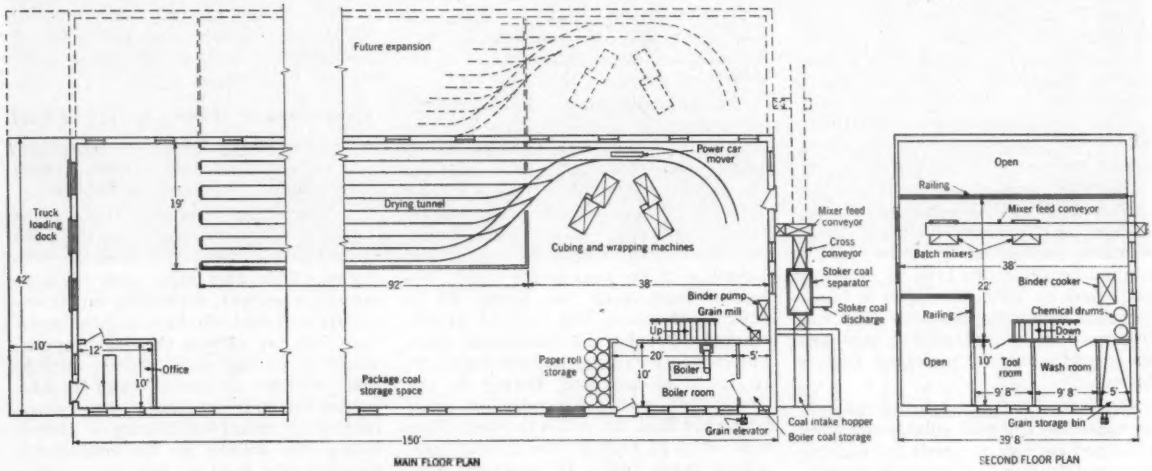
Type A—This type is built at minimum cost to package yard screenings. It is usually a sideline operation in a coal yard but in some instances is an independent enterprise. It has minimum mechanical facilities and usually has been erected by the owner without much engineering at a cost of $6,000 to $10,000. It employs pick-up labor or retail-coal-yard labor at piece or hourly rates and makes packages to meet demand. Maintenance and lubrication of the machines and the quality of packages are irregular. It has one cubing machine, the drying room is sometimes inadequate, and materials for packaging are bought in small lots at market price.

Type B—A plant of this type is operated by the owner, who does part of the work. It is located in a rented warehouse or in a large building that has not been designed for packaged fuel. It is an independent enterprise specializing in making packaged fuel for both small customers and distributors. Fuel is purchased from the mines, customers are given good service, and the business is closely watched by the operator-owner. Labor usually is paid on a piece-rate basis, and the machines are speeded up to maximum capacity of about 1½ tons per hour each. Materials for packaging are bought in relatively small lots at market prices. The plant has no reserve coal-storage space except two or three railroad cars, and these are emptied by hand or with the assistance of a portable loader. About 6,000 tons of packages a year are made with two machines. Original investment is about $15,000.

Type C—This type plant is automatic as far as possible. It has a track loader, a large overhead storage bin for at least 100 tons of coal, an elevator to the bin, and good mechanical facilities for handling the packages. The drying room is well-designed and is heated by a stoker-fired furnace or steam coils. About 50 tons of live-storage and 100 tons of dead-storage capacity are available. The plant has two packaging machines having a combined capacity of about 2.6 tons per hour, and these are maintained by periodic servicing. This type plant usually has a superintendent who does part of the work of moving packages in the drying and storage room, assists in maintenance, keeps the books, handles customers, and synchronizes operations. The plant labor is paid on a daily or hourly basis. The owner of this type of plant is aware of the indirect costs of manufacture, he keeps good records, and he tries to make standardized and uniform packages. The average cost of the plant is $25,000 to $30,000, and the plant makes about 5,000 to 6,000 tons a year.

Type D—This type plant is the largest of the four types under consideration, with a net capacity of about 10 tons per hour, and is well designed and engineered to take advantage of all labor-saving devices. It employs about five men for operation during one shift. This type plant is represented in figure 1. A number of such plants sell unwrapped cubes. (It is believed that this size unit is the most economical for manufacture of packaged fuel.)

Packaged fuel is a typical American business effort to sell something better than that formerly used. It is doubtful that persons in other countries can conceive the good in consuming starch grains or manufactured paper in a heating furnace merely to



Packaging fuel requires a series of operations involving careful layout of floor plans

improve the comfort, cleanliness, and convenience of handling coal; however, the growth of the industry has proved that packaged fuel is popular in many homes, and perhaps the end justifies the means.

Packaged fuel fills a need for spring and fall heating, when small lots of coal are needed on occasional cold days. It is convenient to transport in passenger cars and it makes no mess in homes. It has certain fundamental advantages of standardization that other solid fuels do not possess, and its uniform shape and size may invite inventors to fashion cheap automatic equipment for burning in small furnaces. Packaged fuel can be marketed in mechanical dispensers like gum or candy, and some grocery stores handle it much like food packages.

The study of the industry by the Bureau of Mines has revealed certain characteristics of the retail-fuel problem, and the following general conclusions regarding costs and technical problems are indicated:

1. Apparently satisfaction is obtained when good, solid cubes are delivered in clean, dry packages, and considerable expansion of possible market is indicated under these circumstances during normal times, even at premium prices over lump fuel delivered in bulk.

2. Packaged fuel has been popular for spring and fall heating, but many homes are heated exclusively with this fuel. Many people do not like to carry coal in their bins during the summer months, and some hesitate to invest in large amounts of bulk coal in the early fall, so they turn to packaged fuel at the beginning and end of the heating season. The convenience of clean packaged fuel in small homes where space heaters are used for heating is responsible for some of the demand for this new fuel.

3. Some changes in the technique of firing furnaces with packaged fuel are necessary to attain the best performance. The packages should not be disturbed or poked until thoroughly heated and the outside parts of the cubes have coked. When this occurs the coked fuel cubes are similar to lump fuel and can be treated in the same way.

4. Although packaged fuel and fuel briquets are considered as briqueted fuels, they have characteristic differences in methods of manufacture and handling and in shape and size. Fuel briquets are made at mines or in localities where large quantities of fine coal are concentrated, and relatively large plants are used for manufacturing. Packaged fuel is made near ultimate consumers in relatively small plants. Fuel briquets are made to simulate solid fuel and handled as bulk solid fuel in dealers' yards. Packaged fuel is a different form of solid fuel and must be handled and distributed by special methods. These fundamental differences are reflected in the costs and economics of the two industries.

Costs of Coal Versus Wholesale Value of Packages, 1941
(Dollars per ton)

City	State	Cost of coal at mine	Freight rate	Value of coal at plant	Wholesale price of packages	Value added by manufacture
Columbus	Ohio	2.75	2.20	4.95	8.50	3.55
				4.95	9.43	4.48
Cincinnati	Ohio	2.75	2.00	4.75	9.00	4.25
Toledo	Ohio	2.75	2.74	5.49	8.50	3.01
		2.13	2.74	4.87	8.50	3.63
Cleveland	Ohio	2.75	2.74	5.49	8.75	3.26
	[1]				[1] 9.23	
Indianapolis	Ind.	2.75	2.68	5.43	9.50	4.07
Fort Wayne	Ind.	2.75	3.05	5.80	9.00	3.20
	[1]				[1] 9.06	
Detroit	Mich.	2.75	2.95	5.70	8.50	2.80
	[1]				[1] 8.54	

[1] Bureau of Mines, Economics and Statistics Branch, 1941 Survey, State Average.

Estimated Total Costs of Manufacture of Packaged Fuel—1941-42

	Type of plant A	B	C	D
Direct manufacturing costs, dollars:				
Labor at 75 cents per hour	1.27	1.26	0.86	0.63
Supervision in plant at 90 cents per hr.	.09	.27	.34	.05
Power at 2½ cents per kw.-hr.	.12	.12	.15	.15
Heating and Drying	.12	.12	.10	.10
Paper at 7.15 cents per pound	.57	.57	.57	.57
Tape at 41 cents per roll	.27	.27	.27	
Binder at $3.66 per 100 pounds	.73	.55	.37	.85
Total direct costs	3.17	3.16	2.66	2.37
Indirect overhead costs, dollars	1.50	1.00	1.25	.80
Indirect manufacturing costs, dollars	.34	.36	.36	.19
Total costs of manufacture, dollars	5.01	4.52	4.27	3.36

5. In 1940 about 88 percent of the packaged-fuel plants had an annual capacity of less than 15,000 tons a year each, and these produced about 50 percent of the total annual production. About 40 percent of the plants have a capacity of less than 2,500 tons annually and produce about six percent of the total annual production. There is a trend toward larger plants to reduce costs, and units having a new capacity of about 10 tons an hour appear to be most economical.

6. The cost of production in small packaged-fuel plants is high. In 1939 the total cost of manufacture in these plants was about $4 per ton and had advanced to about $5 per ton in 1941-42. On the other hand, the total cost of manufacture in medium-size plants of about 10 tons an hour was approximately $2.85 in 1939 and $3.36 in 1941-42. These costs exclude the cost of coal at the plant.

7. A study of physical and chemical properties of fuel cubes revealed that satisfactory packaged fuel, air-dried to about 1.0 percent moisture, should have the following properties:

a. The average compressive strength should not be less than 85 lb. per sq. in.

b. The average apparent specific gravity should not be less than 1.04. This property is of secondary importance for indication of quality.

c. The average abrasion loss in the modified tumbler test for coal should not exceed 15 percent.

8. Ten lb. of starch binder per ton of coal is sufficient to make satisfactory packaged fuel if coal, starch, and water are properly mixed and packages are dried to remove at least 60 percent of the moisture. It was observed that the principal causes of unsatisfactory packages in most plants were improper mixing and insufficient drying.

9. The time required for adequate drying and hardening of starch-bonded cubes in air of about 10 percent relative humidity varies with the temperature of air from 35 hrs. at 110 deg. F. to 10 hrs. at 170 deg. F.

10. Advancing prices and labor problems resulting from the war have jeopardized the economical operation of small packaged-fuel plants, and those having high operating costs cannot remain in operation.

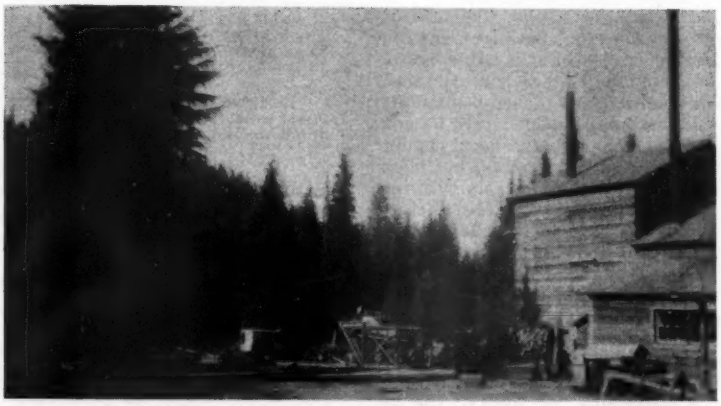
11. No mention has been made in this report of the serious fire hazard that most small plants endure. A lot of plants have just grown like Topsy, they have been accommodated to wood structures, and little attention has been given to fire prevention. Several have burned during 1942 and 1943 because of overheated drying rooms and improper arrangement or design of equipment to reduce the fire hazard.

The garnet gravel has been exposed by power-shovel trenching operations

Spokane Garnet Sand Operation

Deposit, Known to Gold Prospectors, is Now Capable of Producing Large Quantities of Garnet for Various Uses

By H. W. INGALLS
Mullan, Idaho



A gasoline-driven dragline delivers the gravel to the mill receiving hopper

MOTHER nature did a wonderful job for the Spokane Garnet Sand & Sales Company when, during some prehistoric ice age, she ground up millions of tons of granite-bearing mica schist from surrounding hills and deposited it in a lake bed at the head of Emerald creek in Benewah county, Idaho. This is about seven miles from the small town of Fernwood, on a tributary stream of the St. Jo river above St. Maries, Idaho, a division point on an electrified portion of the Milwaukee railroad system.

The deposit is located in deep-snow country and was first discovered by early gold prospectors who roamed the western United States in the pioneer days of the country and who by some miraculous intuition, combined with a lot of courage and hard work, found practically all of the great gold deposits of the west. They followed the high mountain ranges and found segments of prehistoric river channels in such isolated places that one wonders how they ever found them, or (as some have put it) how the deposits ever got there in the first place.

Old prospect holes show that these pioneer gold seekers visited Emerald creek, where they found this garnet sand deposit, but it did not contain sufficient gold to constitute pay gravel, so they left it. The story of Emerald creek persisted until several decades later when it reached the ears of Mr. P. C. Stanley, a mechanical engineer, who is now president and manager of the Spokane Garnet Company's mining operations, in partnership with H. C. Craig, who is the sales manager of the two-man company.

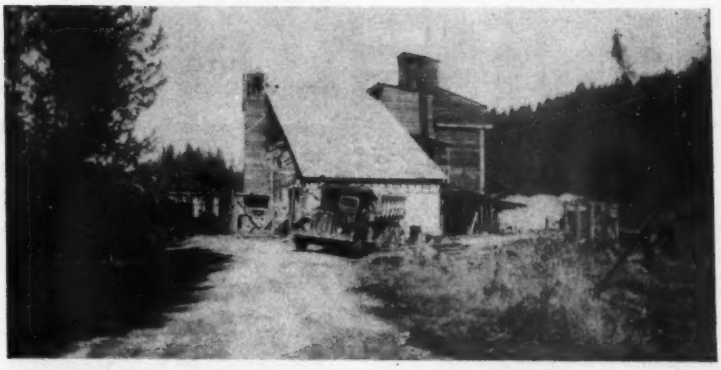
Craig, who was a salesman for an abrasive company, during one of his business trips, became acquainted with Stanley and mentioned that if they could find a garnet sand deposit of any importance they could "go to town." Stanley remembered the remark and when he heard of the Emerald creek deposit he visited the district and was so impressed with the possibilities that he wired Craig he had found the garnet deposit they were looking for.

This was the beginning of many headaches for both men. They acquired about 360 acres of land in the old lake bed area and started prospect operations by sluicing the garnet gravel out by hand, which was a slow and unprofitable process, but it demonstrated the possibilities of the venture if equipped with modern methods of mining and treatment.

The garnet sand proved to be about five ft. thick, but it was covered with an overburden of from four to five ft. deep, and on top of this was a primeval forest of standing trees, windfalls, brush and boulders. The test holes put in convinced the owners that they had sufficient tonnage to warrant the erection of a milling plant, so they put up a small experimental plant, which has been succeeded by several others, each new layout showing improvement in the

recovery process until the company now has a plant that will produce a maximum of 50 tons of finished garnet sand per day. Improvements are still contemplated, however, as the deposit is capable of much greater production if demands should warrant it. As a matter of fact, mining engineers have estimated that the company's trenching operations over a wide area have demonstrated the existence of at least 3,000,000 tons of profitable garnet gravel. Unprospected areas in the vicinity showing the same general geological conditions would indicate several times that much possible tonnage.

The garnet gravel lies on top of about 18 in. of heavy clay. The operating company has never gone below this clay deposit, for the simple reason that they have plenty on top of it, but one old resident of the district claims to have sunk a water well to a depth of 16 ft. and found garnet sand below the clay deposit. This development would not be surprising, considering the prolific distribution of garnets in the surrounding rock formation.



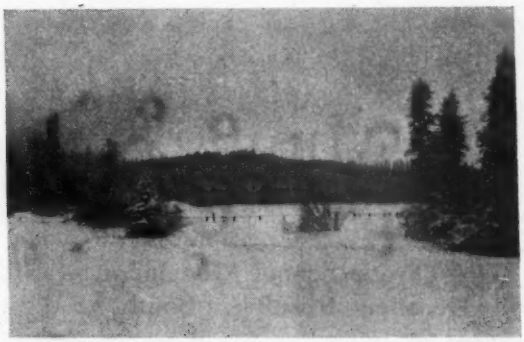
The present milling plant represents the results of continuous experimentation and improvement

The milling plant is powered by a 13,000-h.p. Caterpillar Diesel engine which produces 75 k.w. The primary milling process employed is a simple installation of Pan-American 2-cell jigs and Wilfley concentrating tables, which recover the coarser products. Other parts of the process include Denver jigs, vibrating screens and oil-fired dryers in recovering the finer grades and preparing them for market.

box, when full of sand, contains about $2 worth of gold.

The weight of the material is one of its commercial advantages. It weighs from 4200 to 4500 lb. per cu. yd. The hardness is 7.5 by Moh's scale. Its cutting sharpness is due to its natural 12-sided crystal form; and, its color ranges from a deep maroon to a light pink, depending on the fineness of the material.

Snows are heavy in the region. Note telegraph pole in right foreground



The garnet sand deposit is in a lake bed at the head of Emerald Creek

Mining and Milling Operations

At present everything connected with the mining operation is on a contract basis. The Diamond Drill Contracting Company of Spokane digs the gravel with a gas-operated dragline shovel at so much per ton. This part of the operation includes delivering the gravel to a primary washing plant to get rid of the boulders and other undesirable material and passing it through a 3/16th-in. revolving screen. The resulting sand averages 44 percent garnets.

The material is then put through the milling process under a price per ton contract by the Colonial Construction Company of Spokane and delivered in marketable form to the Spokane Garnet Sand & Sales Company, who are at present delivering the entire product to the United States government for war purposes.

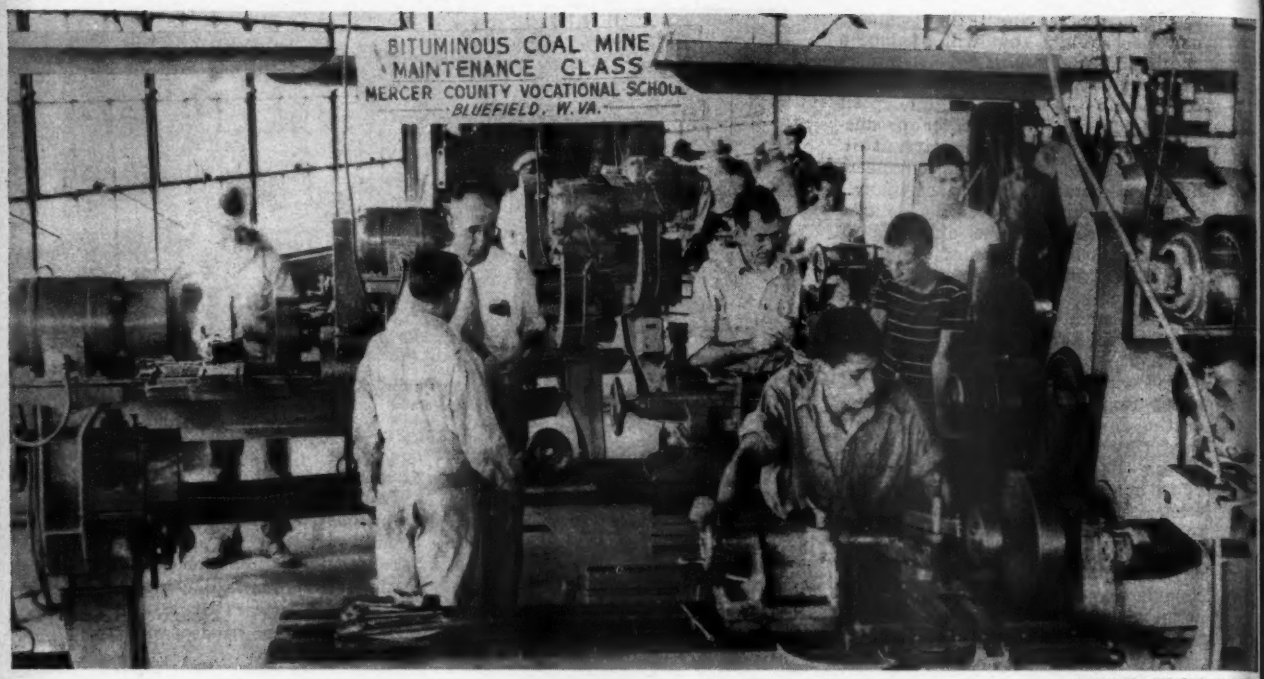
Product Obtained is High in Value

The company is producing a garnet product ranging in screen size from natural gems from No. 6, which is about the size of a grain of wheat, to smaller screen sizes of 10, 14, 20, 30, 40, 50 and 60 mesh. Finer material is produced by crushing the No. 6 gem product to any mesh desired up to 100-minus.

The value of the product varies from $55 to $125 per ton, depending on the grit content. In addition to its garnet value the gravel contains a small amount of gold which the present operators have made no attempt to recover. However, they have a fine sand box connected with the preliminary washing operation which fills with sand in a short time. Assays taken at this point indicate that the

The product has a wide variety of uses, including the cleaning of aluminum, magnesium, brass and bronze, steel and iron castings, and air sand blast operations of all kinds.

The mining operation is similar to a gold dredging operation and could be handled in the same manner. It is located in a natural amphitheatre, with the old lake bed surrounded by heavily timbered mountains. The surrounding formation is mica schist heavily studded with garnet crystals of all sizes from the size of a pin point up to as large as hazel nuts. The three and one-half mile haulage road connecting the plant with the Milwaukee railroad system is surfaced with oversize gravel from the washing plant operation, so it can be truthfully said the road to the mine is literally paved with garnets.



-HAMILTON WRIGHT PHOTOS

The boys take an intensive course in lathe work, forging, welding—all designed to train them for mine repair work before taking the final part of the course in an actual mine

Coal Mining School For Boys

The Trade School Movement is Bringing About Excellent Results in Southern West Virginia

By W. E. E. KOEPLER
Secretary
Pocahontas Operators Association

THE Mercer County Vocational School at Glenwood Park, West Virginia, is America's first coal mining school for 'teen-age youngsters and adults. Centrally located with reference to Bluefield, Princeton and Matoaka, the school is conducting a complete course covering the ABC's of bituminous coal mining. Boys from age 15 up are eligible to enroll if they are in the 10th grade or higher in school.

Mostly sons of miners, the students tackle all types of mine maintenance problems. Everything from machine shop work to actual coal mining operations underground is taught. Sheet metal and pipe fitting, electricity, machine repair, welding, blacksmithing, car repair, trackwork, timbering and ventilation, safety and first aid are among the subjects arranged and scheduled according to the accompanying table.

Boys under 18 cannot work in mines but a capacity enrollment is losing no time in learning the fundamentals of bituminous coal mining during school hours.

The school is the outgrowth of wartime manpower shortages in the coal fields but principally the result of many years of effort among local coal men to reach a satisfactory basis of teaching mining. Several other counties in southern West Virginia have also secured starts on their trade school programs. Among these are McDowell, Raleigh, Logan, Fayette, Kanawha and Wyoming. These counties were able to take over NYA shops as a starter but when materials are available, some, or perhaps all, will construct modern new buildings.

William R. Wood, Jr., inspects a piece of coal he has cut from the coal face

The McDowell County School Board, for example, has recently purchased a tract of land near Welch, near the site of the old Coney Island playground where driveways, parking space and other features will aid in a good start on a new central trade school. It is planned to construct the new three-story building of concrete with exterior walls almost entirely of glass. The building will have 80 ft. by 40 ft.

The art of good timbering is thoroughly brought out in the "learn by doing" method

Above: Boys ride to the mine from the nearby towns of Bluefield, Princeton and Matoka

The boys are trained with a view to gaining a complete basic understanding of the objectives in good mining practice

Below: An early understanding of gas testing and mine ventilation receives a prominent place in the course

MERCER COUNTY VOCATIONAL SCHOOL—GLENWOOD PARK, PRINCETON, W. VA.

Classes for High School Students
School's Capacity 110 Students.

Three-year Vocational Mine Maintenance Mechanics
Students Accepted, Age 15-up. Must be in 10th Grade.

SHOP 1 Sheet Metal Pipe Fitting	SHOP 2 Machine Shop	SHOP 3 Electricity	SHOP 4 Machine Repair Safety	SHOP 5 Welding Blacksmithing Car Repair	SHOP 6 Track-Timbering Ventilation
Section 1 Class Capacity—16 9 A.M.—12 Noon	*Section* 4 Class Capacity—18 9 A.M.—12 Noon	*Section* 7 Class Capacity—16 9 A.M.—12 Noon	*Section* 10 Class Capacity—18 9 A.M.—12 Noon	*Section* 13 Class Capacity—18 9 A.M.—12 Noon	*Section* 16 Class Capacity—16 9 A.M.—12 Noon
Section 2 Class Capacity—16 1 P.M.—4 P.M.	*Section* 5 Class Capacity—18 1 P.M.—4 P.M.	*Section* 8 Class Capacity—16 1 P.M.—4 P.M.	*Section* 11 Class Capacity—18 1 P.M.—4 P.M.	*Section* 14 Class Capacity—18 1 P.M.—4 P.M.	*Section* 17 Class Capacity—16 1 P.M.—4 P.M.
Section 3 Class Capacity—16 6 P.M.—10 P.M.	*Section* 6 Class Capacity—18 6 P.M.—10 P.M.	*Section* 9 Class Capacity—16 6 P.M.—10 P.M.	*Section* 12 Class Capacity—18 6 P.M.—10 P.M.	*Section* 15 Class Capacity—18 6 P.M.—10 P.M.	*Section* 18 Class Capacity—16 6 P.M.—10 P.M.

Shops	First Year Weeks	Second Year Weeks	Third Year Weeks	Hours
Sheet Metal and Pipe Fitting	6	..	6	180
Machine Shop	6	6	6	270
Electricity	6	18	18	630
Machine Repair	6	6	..	180
Welding, Blacksmithing, Car Repair	6	6	..	180
Track, Timbering, Ventilation	6	..	6	180

The first year the students change classes every six weeks. This gives them a chance to become acquainted with each course in order that they will understand the application of tools to the various jobs.

The second and third years the students start specialization in Mine Maintenance. Students may specialize in any course that they desire—after the first year—by taking forty-five (45) weeks continuous work in the selected field.

Sections 3-6-9-12-15-18 for out-of-school youth and adults—Time arranged to suit classes.

clear space on each floor with 12-ft. ceilings. The first floor will have machine, mine maintenance, electrical and welding shops. Woodworking, auto-mechanics, office and spare space will occupy the second floor with offices and class-rooms on the third. Doors and roadways are to accommodate large trucks, and railroad tracks will make it possible to bring in heavy mining machinery. Mining operations for instructional purposes will take place in an adjoining tunnel.

W. E. E. Koepler, secretary, Pocahontas Operators Association, speaking before a recent meeting of the Pocahontas Electrical and Mechanical Institute reported as follows:

"The complete equipment of the building is already assured from funds available for war production training dispensed by the War Production Board through the Bureau of Education, Department of Interior, and the next two years will be devoted to war production needs but the program will remain under the control of the State Bureau of Vocational Education and County School Boards from the start. Persons of any age or sex may take the courses free of charge. The long-time plan contemplates this school becoming the County Vocational High School. The students will take their usual high school and related class work in their home schools as at present and come to the central school for their specialized vocational training several days each week."

Marketing Agencies for Producers of Natural Resource Products — *Part Two*

Effects of the Appalachian Coals Case and Proposed Legislation for Amending Anti-Trust Laws so as to Legalize Marketing Agencies of Producers of Natural Resource Products

By HOWARD W. VESEY
Attorney,
Washington, D. C.

THE *Appalachian Coals* case marked an important step toward a more enlightened interpretation of the Sherman Act and its relation to modern business conditions. It had been the settled policy of the Court to look upon all combinations tending toward the restraint of trade, whether honest or dishonest in their purpose, as violative of the spirit and letter of the Sherman Act. The "rule of reason" which Mr. Chief Justice White had propounded some 20 years before had been more a shibboleth than a guide in defining the policy of the Court in anti-trust matters. This subservience to the letter of the Act had brought forth criticism, no less striking for its eminence than for its quantity, which had become increasingly sharp during the depression of the 1930's. The Supreme Court had determined that combinations resulting from normal organization, but which did not aim at monopoly control, were not to be condemned, but agreements between independent dealers, the purpose or effect of which was to eliminate competition among themselves and to fix common selling prices, were held to be unreasonable restraints of trade. In other words, by the "rule of reason" mere size of or unexerted power in a corporation was not condemned, but agreements or combinations which had a tendency to restrict competition unduly were violations of the Act.

Several decisions handed down a few years prior to the *Appalachian Coals* case had suggested a lightening of the restrictions imposed on cooperative activities, but subsequent developments had discounted their significance. It was reiterated that no sanction would be given to attempts at concerted action with respect to prices or production. In casting aside these precedents, the Court in the *Appalachian Coals* case was guided chiefly by the deplorable state of the bituminous coal industry, which had been caused mainly by excessive productive capacity and unrestricted competition. The decision of the Court, cautiously worded, denoted sanction of concerted action which has a *tendency to stabilize* market prices of a distressed product and to raise such prices to a level higher than would otherwise obtain. If such action led to undue restraint of competition, the Court reserved the authority to enjoin its continuance.

The same identical reasons exist for the exemption from the anti-trust laws of cooperative action by any of the producers of natural resource products, whether such producers be farmers, coal mine operators, oil or gas well operators, or saw-mill operators. Furthermore, provision for the intervention of a member of the executive arm of the government, in addition to the Attorney General, adds little if anything to the enforcement machinery. Viewed in this light the decision in the *Appalachian Coals* case was in complete harmony with developing legislative policy. Nevertheless, the meaning of the decision is still subject to debate in view of the Court's direction to retain jurisdiction. Thus the question remains as to whether statutory exemption is a prerequisite to validity. If reason and logic are to form the basis of our determination, then certainly such statutory exemption is not necessary.

The Theory of Prior Approval

Since the decision in the *Appalachian Coals* case, a new theory of regulating cooperative action by producers of one natural resource product has been tried out. This is the theory of prior approval. It was advocated because of the belief that it would remove uncertainty and avoid the assessment of penalties for mistakes of judgment. Experience has proven it fallacious. It was tried in the bituminous coal industry and, in view of the fact that it has not been given adequate publicity, I want to dwell upon it at some length. Appalachian Coals, Inc., was one of the principal guinea pigs used in that experiment.

The decision in the *Appalachian Coals* case had barely been handed down and the agency started to function when Congress, on June 16, 1933, passed the National Industrial Recovery Act. Appalachian Coals functioned under this Act as an adjunct to a regional code authority. Following the decision in the *Schechter* case striking down the N.I.R.A., Appalachian Coals again began to function under the plan of operation approved by the Supreme Court. In passing the Coal Conservation Act of 1935 on August 30, 1935, Congress declared, in Section 13, that any combination between producers creating a marketing agency for the disposal of competitive coals at prices to be determined by the agency should be deemed unlawful as a restraint of trade unless approved by the Commission set up under the Act. No specific procedure for obtaining approval was indicated. In Section 4 the organization of such agencies in any of the 23 geographical districts delineated in the Act was authorized; the only restrictions being that the agency should conform to such "general rules and regulations" as were prescribed by the district boards with the approval of the Commission; that they impose no unreasonable or inequitable conditions of membership, and that they remain truly representative of at least one-third of the tonnage of any producing field. Appalachian Coals, Inc., qualified as a marketing agency under this Act. However, on May 18, 1936, the Supreme Court invalidated the Act because of its labor provisions.

Thus, from March 13, 1933, to the passage of the Bituminous Coal Act of 1937, the only bituminous coal marketing agency then in existence, Appalachian Coals, Inc., functioned for only a few months without some kind of a statutory protective cover.

On April 26, 1937, the Bituminous Coal Act of 1937 was approved and became effective. The Commission was authorized, in Section 12 of the Act, to approve upon application marketing agencies of producers.

Beginning in June, 1937, the organizing of coal marketing agencies began and applications for approval were filed. In July, 1937, the first hearing was held, and in September, 1937, the Commission began granting "provisional" approval upon finding that the

> "applicant did not 'exercise such control in markets as to restrict the supply of coal in interstate commerce or prevent the public from receiving coal at fair and reasonable prices'."

This so-called provisional approval was founded upon the provisions of the Commission's Order No. 6, dated June 21, 1937. Following the issuance of Marketing Rules and Regulations on November 29, 1937, the Commission issued orders extending the provisional approval thus granted.

On July 12, 1941, the Bituminous Coal Division, successor to the Commission as the administrative agency, issued orders to show cause why the orders granting provisional approval should not be further amended and modified in certain respects. Similar orders to show cause were issued to all of the 14 marketing agencies which had sought approval under Section 12 of the Act. The proposed modifications (20 in number) were set out in an "Exhibit A," attached to the order to show cause. They embraced virtually all phases of the activities of the agencies in their sale of coal and vitally affected their business as marketing agencies. In general, these modifications can be characterized as:

1. Regulations authorizing the imposition of maximum prices upon the agency by the Division.
2. Regulations authorizing the Division to fix the agency's rates of commission.
3. Regulations which could not be complied with by the agency. These regulations covered matters concerning which the agency could not be expected to have knowledge.
4. Regulations which the agency could comply with but which were extremely burdensome, or, in the main, unnecessary.
5. Regulations which deprived the agency of the full benefits of the approval authorized in Section 12 of the Act.

It should be obvious to anyone even slightly familiar with the operations of a marketing agency that these regulations, if imposed, would completely destroy it. The division, as I have heretofore pointed out, did not single out any particular agency. It proposed in similar orders to show cause to write these restrictions into its approval of each of the agencies which had made application for approval.

What were the reasons for this action by the Division? No specific reasons were ever given. Although conferences were held with the Director and the General Counsel of the Division, none of the agencies was ever given more than the most general kind of oral explanation to the effect that the Division, after conferences with the Consumers' Counsel, had determined that such action was necessary for the protection of the public. No charges of improper conduct were ever made. No charges of any violation of the order of approval were made in the order to show cause and none were made at the hearings. No abuses of any kind or character resulting from an agency's activities were alleged or shown at the hearing. The agencies were simply hailed before the Division and required to justify their opposition to the proposed regulations without knowledge of either the reasons for their imposition or the evils, if any, which the Division sought to eradicate.

In spite of the obvious unfairness of this procedure, each agency came forward and performed the duty thus thrust upon it. The Division refused to assume the burden of going forward, and the agencies were forced to strike out blindly, even to the extent of introducing a substantial body of documentary evidence previously supplied the Division and the Consumers' Counsel.

In the early part of 1942 the trial examiners began filing their reports. All of the reports followed the same theories with respect to the necessity for the proposed restrictions and with only slight modifications, in substance immaterial, recommended that they be imposed by the Director.

On August 11, 1943, the Director issued an order effective August 23, 1943, cancelling all orders of provisional approval of marketing agencies and dismissing all of the Order to Show Cause proceedings. Thus, these proceedings came to a close without any decision ever having been rendered by the Division and with the agencies still uninformed of the reasons behind the proposed regulations or the Division's views with respect to such agencies.

The significant facts developed in this attempt to regulate marketing agencies by requiring prior approval of their activities by a governmental agency are as follows:

1. supplying the regulatory agency with copies of every agreement, price list and change thereof, order, invoice, and other documents imposes too great a bur-

Unloading coal at Superior, Wis.

den to permit the agency to survive;

2. the time lag involved in obtaining prior approval deprives the agency of the flexibility which it must have if it is to successfully compete in an active competitive market; and
3. the members of the agency are saddled with restrictions which are not imposed upon non-members, and this deprives them of an equal competitive opportunity in the marketing of their products.

This method of regulation, instead of fostering cooperative action, tends to destroy it. The gains which are desired are lost in administrative convulsions. Finally, it may be said that this method of control, from the point of view of the public, has no practical advantages over the method of control used in the agricultural cooperative exemption acts. If specific legislative exemptions are deemed necessary and a further administrative process is to be established, then certainly the method of control established in the Capper-Volstead Act should be followed and the prior approval method should be discarded.

In reviewing the activities of coal marketing agencies under the Bituminous Coal Act, one further point should be emphasized. Congress, in writing Section 12 of the Act, stated that the activities of such agencies were unlawful as restraints of interstate trade and commerce within the provisions of the Sherman Act unless approved by the prescribed governmental agency. Does that declaration mean that in the absence of specific statutory exemption cooperative action involving prices, production and markets is unlawful? If so, then the distinction made by our courts between agreements which "fix" prices and those which "affect" prices, is meaningless. I do not believe such a conclusion should be drawn from the language of Section 12. A more rational view would seem to be that in this instance Congress was merely acting in aid of the administrative organ which it was creating to supervise and control the entire coal industry. The Department of Justice, on the other hand, was at one time apparently inclined to take the opposite view. In the early part of August, 1943, rumors began to spread that certain members of the legal section of the Division had conferred with members of the staff of the Anti-Trust Division of the United States Department of Justice with respect to the legality of the operations of bituminous coal marketing agencies following the expiration of the Bituminous Coal Act of 1937, as amended, on August 23, 1943. As a consequence, counsel for one of the agencies conferred with certain members of the staff of the Anti-Trust Division. This conference evoked a letter under date of August 6, 1943, from the Assistant Attorney General in Charge of the Anti-Trust Division, the pertinent paragraph of which reads as follows:

"I think I should tell you quite frankly that, with statutory protection gone, if the operations of your agency, either viewed alone or in connection with similar activities of other agencies, are intended to stabilize, or have the effect of stabilizing the market prices of coal, such operations, in my opinion conflict with the antitrust laws. There, of course, may be other illegal features of such a marketing agency's operations. The circumstances and conditions existing today are so different from those which were before the Court in *Appalachian Coals, Inc.*, v. *United States*, 288 U. S. 344, that I do not regard that decision as a controlling authority upon the question of their legality at the present time."

In a letter dated August 18, 1943, the President of Appalachian Coals, Inc., wrote the Assistant Attorney General a lengthy letter reviewing the history, purposes and functions of the agency.

On August 21, 1943, the Assistant Attorney General acknowledged receipt of the agency's letter and replied, in part, as follows:

"Your letter states that your agency does not fix prices. Of course, it may not fix prices for the entire industry, but I assume there would be no disagreement as to the fact that the agency does sell coal for all producer members at a price established by the agency. Even this might not be objectionable except for the fact that 13 other agencies are engaged in similar practices. Hence, the over-all effect is to stabilize at a more or less uniform level prices in the entire coal industry."

Following receipt of this letter the agency drafted and sent a reply, in which it reiterated its actual sales activities. This closed the correspondence. What effect, if any, the distinction between agreements which "fix" prices and those which "affect" prices, advanced in the agency's correspondence, has had upon the Department's views is not known. It is a sound distinction. It has been recognized by our courts. It should become as integral a part of our legal thinking in connection with the anti-trust laws as has the rule of reason. Unless this distinction is adhered to, and the activities of such agencies appraised in proper perspective, then the only alternative is statutory exemption. A move in this latter direction has already been made.

Proposed Legislation to Confer Statutory Exemption

Under date of January 29, 1944, the Natural Resources Department Committee of the United States Chamber of Commerce recommended to the Board of Directors that it approve and urge Congress to enact a bill providing for cooperative action in natural resource industries by amending the anti-trust laws so as to legalize marketing agencies of producers of natural resource products.

The proposed bill further provides that any such association "operated for the mutual benefit of the members thereof" may (a) act as a marketing agency and determine prices by agreement between the members or by the association or between the association and its members, (b) use as subagents the sales forces or agents of members or nonmembers, and (c) "may make the agreements necessary for carrying on" its activities.

From the standpoint of the producers of natural resource products, which are defined to be "the products of forests or mines and of wells which have not been processed or refined beyond the first stage adaptable to commercial use," this proposed legislation confers the same statutory exemption upon those producers which Congress has already conferred upon agricultural producers.

These producers are in the main small in size and they are located so far from the markets that it is impossible for them to maintain adequate engineering, sales, and distribution departments. Nature has determined the place of production, and in doing so no consideration was given to the locations of future markets. Only through the development of efficient marketing machinery, predicated upon a full and free exchange of all current market and production information, can free competitive conditions be maintained.

In the case of producers of natural resource products, the courts have evinced a desire to aid their cooperative efforts. Whether or not this tendency is the result of a realization of a changing economy and the necessity for cooperative action in those industries which are composed of small units located at great distances from markets, or from an attempt to keep in step with changing congressional policy, or from a keen understanding of the distinction between agreements which "fix" prices and those which "affect" prices, is conjectural. In any event, this tendency is today developing into a definite trend.

The legislation proposed by the Natural Resources Department Committee of the U. S. Chamber of Commerce is in harmony with this trend. To date at least nine acts of Congress have made provision for cooperative action by such producers. In addition

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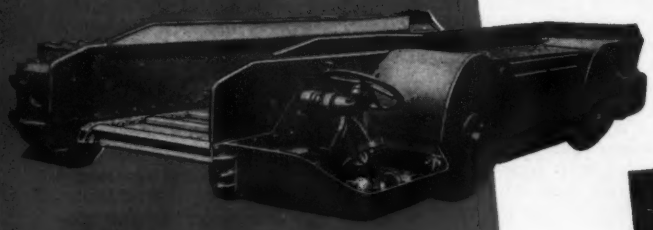

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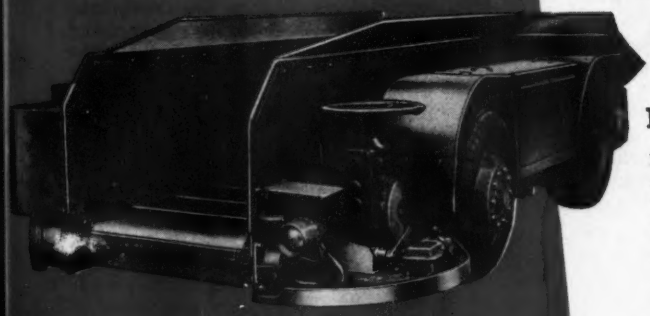

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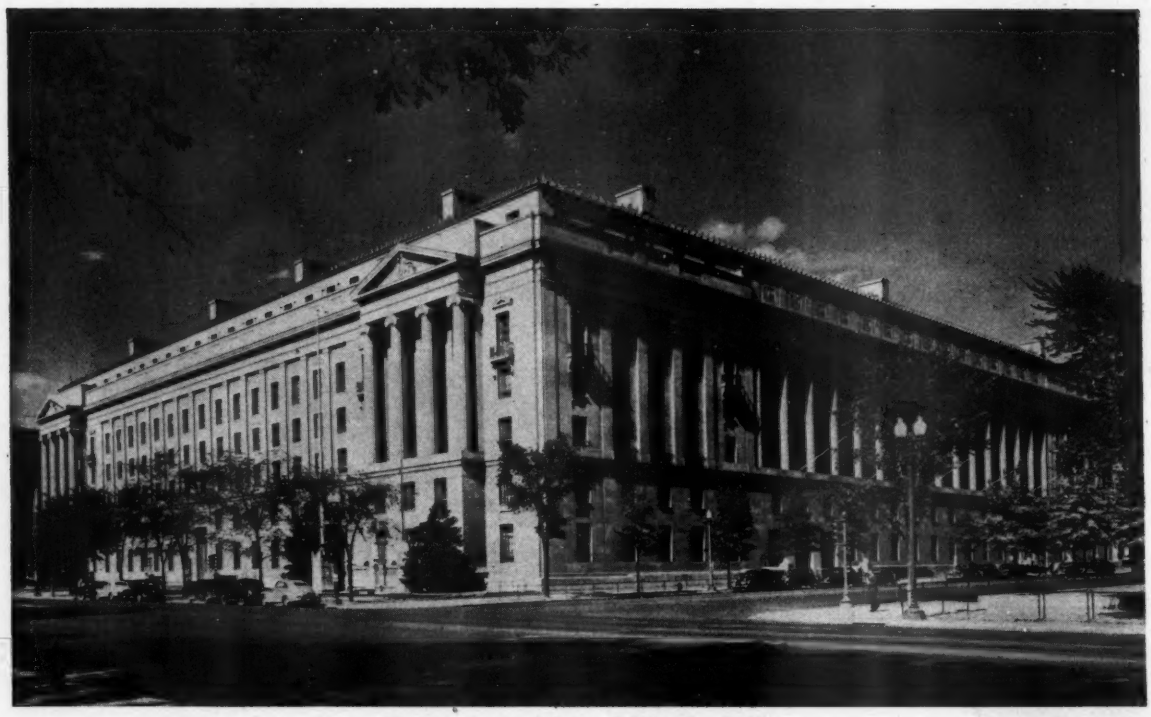


The Department of Justice, Washington, D. C.

to those already mentioned, there are the Appropriations Act of 1926, the Farm Credit Act (1933), the Fishermen's Collective Marketing Act (1934), and the Agricultural Marketing Agreement Act (1937). Hence, it is manifest that Congress approves of the cooperative form of business organization insofar as agricultural and fishery producers are concerned. The same identical reasons which underlie this approval are applicable to the other producers of natural resource products. The paramount question now is whether or not specific legislation is necessary to obtain approval by our courts.

In the *Appalachian Coals* case the Court recognized the necessity for such cooperative action, the competitive benefits and public good flowing from such action, and validated the plan adopted by the producers, subject to further scrutiny after it had been put in operation. Would it do so today? Aside from the conclusions to be drawn from the language of Section 12 of the expired Bituminous Coal Act, the only reason for questioning the decision is the advent of another trend in our court decisions.

This trend may be described as the view that cooperative action affecting prices, production and markets should be legalized only to the extent authorized in a specific statutory enactment, and, further, that the mere fact that a government administrative officer is vested with certain enforcement powers of a quasi-judicial nature by statutory grant does not divest the judicial arm of its control over the enforcement of the federal anti-trust laws. Under this view strict adherence to the legal standard of monopoly and restraints of trade under the anti-trust laws must be followed and liberalization allowed only through legislative action. If this trend is followed the liberal views set forth in the *Appalachian Coals* case will gradually be constricted.

Producers Should Seek the Protection of Recommended Legislation

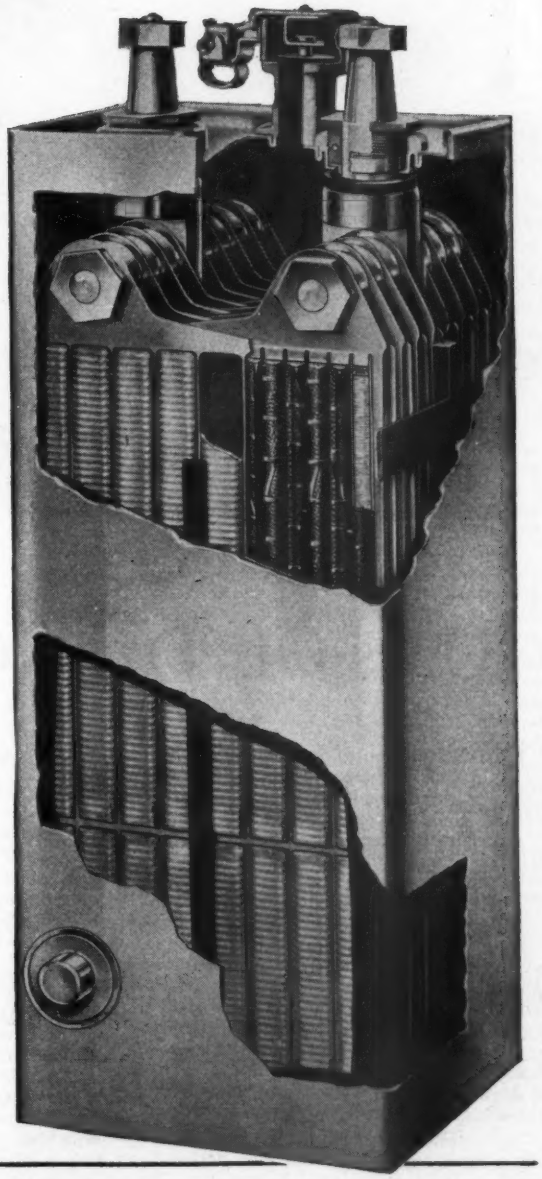
Looking forward to the future, the better part of wisdom would seem to dictate that producers of natural resource products seek the protection of legislation such as that recommended by the Natural Resources Department Committee. The necessity for and the advantages flowing from cooperative marketing activities are today admitted. The method and degree of control are virtually the only remaining problems.

The theory of enforcement followed by one administrative agency in its attempt to exercise control over coal marketing agencies brought into bold relief the fallacy of supervisory control by quasi-judicial prior approval. Had this method been actually placed into effect, no marketing agency could have continued to function. On the other hand, statutory control by means of current reporting to a governmental agency charged with the responsibility of proceeding against the agency by a quasi-judicial process of complaint and answer has apparently proven adequate in those instances where it has been tried.

In conclusion, I wish again to emphasize that from the points of view of congressional policy, the legal test applied by our courts in enforcing the anti-trust laws, and the necessities of our present economy, the decision in the *Appalachian Coals* case is sound. Logically, we have every right to expect the Court to adhere to it in its future decisions with respect to cooperative action by producers of natural resource products. The distinction between agreements which have as their purpose the "fixing" of prices and those which are designed and intended to foster competition, and, as an incident thereto, "affect" prices, is realism in law.

Finally, I want to impress upon you the fact that if statutory exemption is to be sought as a form of legislative insurance, then the method of enforcement should follow the scheme adopted in the Capper-Volstead Act and recommended by the Natural Resources Department Committee of the U. S. Chamber of Commerce in the bill to which I have just alluded. Any method of control involving prior approval is a curse to industry, even though it may seem reasonable to some of our present-day theorists.

MOST RUGGED OF ALL



Here is a cut-a-way view of a single cell of a typical Edison Alkaline Battery for operating mine haulage equipment. Note the ruggedness and precision of its construction. The container, cover, pole pieces and other structural parts are made of STEEL. Even the active materials are permanently locked in perforated STEEL tubes and pockets. These in turn are securely assembled into STEEL grids to form the positive and negative plates. The STEEL cover is welded onto the container. In every detail, this is an entirely different cell construction than that employed in other types of storage batteries . . . and every difference is an advantage to users of alkaline batteries in locomotives and shuttle cars.

Because of their STEEL cell construction, they are by far the most rugged and durable of all batteries. When it comes to standing up under hard, rough usage in mine service, they have no equal. Alkaline batteries in mine haulage service have fallen down shafts and gone through many wrecks with little or no damage . . . and still delivered their full service life. The fact they can withstand such accidents, indicates the extra dependability that can be expected of them under more normal conditions. Their durable mechanical construction is also one of the principal reasons why alkaline batteries stay on the job and out of the repair shop, give longer life and help cut haulage costs. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.*

Edison
ALKALINE BATTERIES

Wood-destroying fungus finds untreated timber one of the best places to obtain its food supply

Uses Of Treated Timber In Mines

The Basic Purpose, Method of Treatment and Various Uses of Pressure-Treated Wood in and Around Mines

By W. R. FRITZE

Koppers Company
Wood Preserving Division

THE selection of wood for various structural purposes in mines is easily understood, when one recalls that wood is one of the strongest structural materials per unit weight which is available. It is easily worked or cut to length with hand tools whether prefabricated or shaped on the job. In past years, many mining companies had standing timber adjacent to the portals of their mines making possible local cutting of timber for use in the mine. It was soon found, however, that this easily obtainable material, used green in many instances, was not as economical as it might have been. Its original strength seemed to disappear.

This short life of mine timbers may not have been considered very important when haulage ways were short, cleaning and screening plants were simple, and required no large investment. In fact the life of a mine was frequently quite short, there was little investment in plant equipment, and, when coal was too far from the mine entrance a new opening was made. Present elaborate cleaning plant, ventilating equipment, power plant, etc., put a stop to this practice, haulage ways became longer and had to be built for more permanent service. Cost of labor has increased so that it is now a major part of maintenance, often being greater than the cost of materials. For these reasons it is important that the wood used in mine construction and maintenance be of a permanent nature.

Progressive operators investigated and noted that the cross bars and posts of their tunnel sets were buckling and crushing after only a few years in

Presented to Monongahela Valley Coal Mining Institute, September 12, 1944.

service. It was found that a large percentage of the crushing, buckling and general failure of their mine timbers and ties was due to rotting of the wood.

Early Preservation Ideas

We have all seen the white or grayish growth that develops on timber in mines. When I think of that growth I recall the story told by a friend of mine, now state coal mine inspector in a western state, about his first job. He is an Englishman, son of a coal miner. When he reached the age of 12 or 13, he was expected to work in the mines. It was an event to go to the "pits" with his father to work. His first job, however, was not digging coal, it was to walk through the entries, particularly the return air courses, with a broom sweeping off this white frothy "fuzz." Sometimes that "fuzz" hung in festoons; at other times it formed brackets on the timbers. After several months he was promoted—to the job of whitewashing the timber with lime, or painting it with salt water. Being a kid, he did not at that time fully appreciate just what the white scum on the timber indicated, nor that the whitewash and salt were crude efforts to preserve the wood. He knows now, like the rest of us, that the festoons and brackets were the outcropping of fungi. The part which he was sweeping off was in itself doing very little damage. It was only fruiting bodies of the fungus whose hair-like roots, called mycelia, were imbedded in the timber and had actually broken down the wood substance, converting it into food for their growth, and thereby weakening the timber. There are many species of fungi. They are low plant forms related to bacteria. In order to exist, they all require four conditions, namely: proper temperature, proper amount of air, proper quantity of moisture, and, of course, a food supply—wood. The slow moving air, the rather high moisture, and the moderate-uniform temperature in mines are ideal for the growth of these wood rotting fungi. To control the moisture, air, or temperature, at which wood is used, to such an extent that fungi could not live, is practically impossible, but by the injection of chemicals into the wood the food of the fungi is poisoned. This is the basic theory behind all wood preservation.

We now wonder why coal miners were not the ones to develop the present-day wood preserving industry. Some of them did investigate, but generally speaking, the railroads, realizing the high cost of renewing their track ties and bridges, have led the field in developing and using wood preservatives. Railroad track ties, which untreated, lasted only about five years, are now giving up to 30 years of service before requiring renewal. Timber bridges, built of untreated timber, require major repairs after only 8 to 10 years, but when pressure treated wood is used over 40 years life is obtained.

The classic example of the life obtained from properly pressure-treated timber is the Lake Ponchartrain trestle in Louisiana. This structure was built of pressure-creosoted timber in 1883. The original piling and timbers are still in service.

Early timber preservation (i.e., treatment of wood with chemicals) was performed by the user by soaking or dipping the wood in toxic materials. Improvement over this practice was the heating of the immersed wood in open tanks and allowing it to cool in the preservative. Some timber users still employ variations of this process.

The earliest pressure treating plants in this country were built about 1850, using various preservatives. The more modern pressure treating processes were introduced here in 1875 when a pressure-creosoting plant was built to treat timbers for the L. & N. Railroad.

Modern Plants Have Extensive Facilities

Today's pressure treating plant consists of a storage yard for the proper seasoning of timber prior to treatment, when time allows, as well as equipment for the artificial conditioning of green wood by steam, or boiling under vacuum when timber is urgently needed, and a framing plant to shape, dapp and, in general, prefabricate timber before treatment. It has treating cylinders in which the cars or trams of timber are placed during the treating process. These cylinders will withstand working pressures up to 200 lb. per sq. in., as well as a high vacuum. The cylinders have connections to air compressors and vacuum pumps, and are equipped with steam coils to maintain proper temperature during treatment. Thermometers, pressure and vacuum gauges are available. Usually, recording gauges are used to make a permanent chart of the treating process.

Wood preservation has become an art, requiring specially trained, experienced operators. As a result, most of the pressure plants are owned and operated by companies specializing in the treatment of timber.

As mentioned above, the preservation of timber is accomplished by the injection of preservative fluids into the wood, thereby preventing its destruction by wood rotting organisms. The ideal strived for is to distribute the preservative as deeply into the wood as possible.

Open tank treatments result only in a thin coating being applied to the exposed faces of the wood. If seasoned before treatment, some checks will be developed which form entrance ways for the preservative, but at best such penetration is shallow. Checking of the wood after treatment or abrasion in service can easily break the thin envelope of treatment—exposing the interior of the wood to decay.

Pressure treatment results in much deeper penetration and so offers greater protection. In general all of the sapwood of a piece of timber can be penetrated uniformly by pressure processes. This is essential to assure good preservation.

The heart wood of most species of wood is difficult to penetrate because its cells are filled with natural oils and resin, and the ducts between cells closed. Usually, heart wood is more resistant to decay and if protected by a heavy layer of treated wood at the surface it will resist decay. Some woods, such as douglas fir which is practically all heart wood are incised prior to pressure treatment to insure uniform penetration. The incising process consists of running the timber through rollers studded with teeth which separate the fibers of the wood, making entryways for the preservative.

The leading preservative used is coal-tar-creosote. It imparts a dark color to the wood, has a characteristic odor but through the years has proven to be the most effective wood preservative available. It stays in the wood because it does not leach or evaporate. Wood pressure-treated with creosote can be successfully painted only with tar-base vehicle aluminum paints or special sealing paints.

There are some places, however, where creosote is not suitable. For such installations, chromated zinc chloride is the preservative most commonly used today.

Zinc chloride too has been time tested. Some of the earlier plants were designed primarily to treat with it. It is applied under pressure by the same processes and in the same or similar equipment as coal-tar-creosote. Straight zinc chloride was rather soluble and had a tendency to leach out of the wood. The addition of chrome salts making chromated zinc chloride is a recent improvement resulting in a much more permanent preservative.

Wood treated with chromated zinc chloride is odorless, colorless and paintable with ordinary paints, and is recommended where creosote treatment is undesirable.

The chromated zinc chloride is less soluble than the old straight zinc chloride. It is still leached to some extent by running water, but does have some advantages over creosote and so has been used to treat mine timbers with good economy. Retentions of ¾ and 1 lb. of dry salt per cu. ft. are usually used to resist decay.

In the past few years heavier retentions of 2 to 3 lb. of the salt per cu. ft. of wood have been used to

make wood fire retardant. Railroads are using this heavy CZC treatment in roundhouse, warehouse, bridge and shop building construction. Wood has long been recognized as retaining its strength through fires longer than steel and concrete when heavy "mill type" construction is used. In the heat of fire, steel warps and sags, concrete spalls and crumbles and so loses its strength.

Untreated sound wood chars but if heavy timbers are used char does not extend deeply enough into the wood to cause failure until long after adjacent concrete and steel would have failed completely. However, untreated wood does contribute fuel to the fire and flame spreads rapidly over the surface.

CZC fire retardant treatments reduce flame-spread and fuel contributed, as much as 60-70 percent and at the same time offers decay protection.

Both coal-tar-creosote and chromated zinc chloride have been used to obtain long decay resistance in timbers both in and around coal mines, and have resulted in great savings of labor and materials and accompanying monetary economy.

Southern yellow pine timber set treated with zinc chloride, after two years in service. Note heavy fungus growth on next untreated timber set

Some Examples of Treated Timber in Mines

Let us examine some of the uses of preserved wood.

The Consolidation Coal Company, in their mine, No. 32, at Owings, W. Va., has been using 5 x 7 cross and switch ties under 60-lb. rails, pressure-treated to final retention of 8 lb. creosote per cu. ft. of wood. In reporting on a two (2) mile installation of this so-called class "A" track, which had been in service 8 years during which time over 6,000,000 tons of coal had passed over it, Mr. F. F. Jorgensen, their manager of production, stated in part:

"One of the first results noted after completion was the very material reduction in the time required by a locomotive to make a round trip. Derailments were almost entirely eliminated and spillage of coal was very materially reduced.

"The maintenance on this first piece of class 'A' track, except for cleaning up the spillage, has been almost nothing, the maximum in any one year has not exceeded $25. A recent inspection showed the ties in this track to be in perfect condition. Borings were taken from the ties at various points and no indication of decay was noted. Twenty years should be a very conservative estimate on the life of these ties.

"In comparing the cost of building a track, the labor cost of the first laying would be the same for treated as for non-treated ties. At present the material cost of a treated tie is approximately 80 percent more than the cost of a non-treated tie; however, a conservative estimate is that the treated tie will have about seven times the life of the non-treated tie. And, when it comes time to replace the non-treated tie, the cost of labor of doing so is nearly 50 percent greater than the cost of the tie and the total cost of replacing the non-treated tie is about 35 percent greater than the cost of the treated tie itself. The savings in the use of treated ties could be estimated over the entire estimated life, but it is unnecessary to go beyond the first replacement to show a material saving. Our experience for the past 8 years has convinced us that the use of creosoted ties in our main line tracks has been a paying investment. In that time, the West Virginia Division alone has purchased approximately 100,000 creosoted ties and has built with those ties nearly 30 miles of class 'A' track."

The Chicago, Wilmington & Franklin Coal Co. installed 6 x 8 6-ft. creosoted ties in their Orient No. 1 mine in 1923. After 12 years of service they reported "No replacements." They too are getting large return from their original investment.

The Bell & Zoller Coal & Mining Co., in their Zeigler No. 2 mine, used creosoted 6 x 8 17-ft. switch ties under a track diamond in 1920. After 15 years of service ties were still good.

EVALUATION OF AR-MOORED TIES

Data Obtained from Engineering Notes of Mine Using AR-MOORED Ties

UNTREATED TIES		AR-MOORED TIES	
Cost per tie (delivered)	$0.168	Cost per tie (delivered)	$1.20
Labor cost for each installation and removal	.140	Labor cost for each installation and removal	.07
Spike cost per tie	.024	Spike cost per tie (none)	.00
Average length of installation	3 mo.	Average length of installation	3 mo.
Average life of tie	12 mo.	Average life of tie	8 years*
Average life of spike	9 mo.	Average life of spike (none)	.00
Total monthly cost..based on above cost and service data	$0.06332	Total monthly cost..based on above cost and service data	.03583

MONTHLY SAVING ON EACH AR-MOORED TIE..$0.02749..OVER 40%

Saving on 2,000 AR-MOORED Ties..$54.98 per month, or $659.76 per year

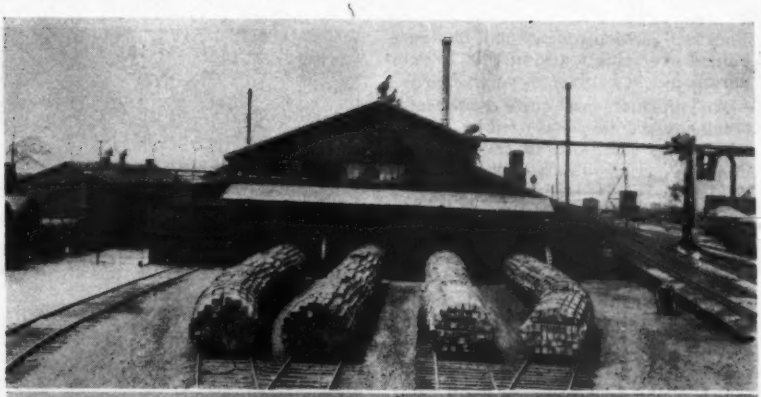
The investment of $2,400 for 2,000 AR-MOORED Ties will be returned in 3.64 years.

Meanwhile this mine has a track installation geared to short life, high ton-hour, high speed, mechanized mining.

*The Engineers were ultra conservative in their 8 years life expectancy of treated ties. Eighteen years would be safe.

AR-MOORED Ties have been laid and relaid as many as 50 times without damage.

Exterior view of a timber treating plant in Ohio showing pressure cylinders and charges of ties ready to enter



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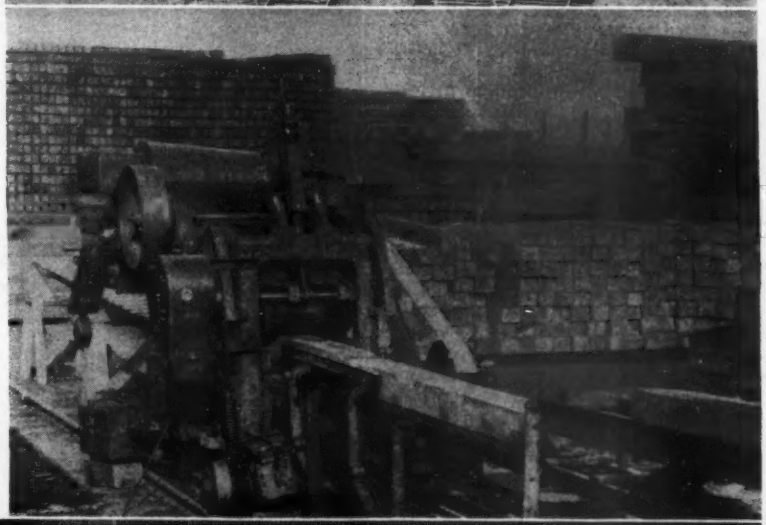
Cross-ties are incised to assure penetration. The method is used on the refractory types of timber



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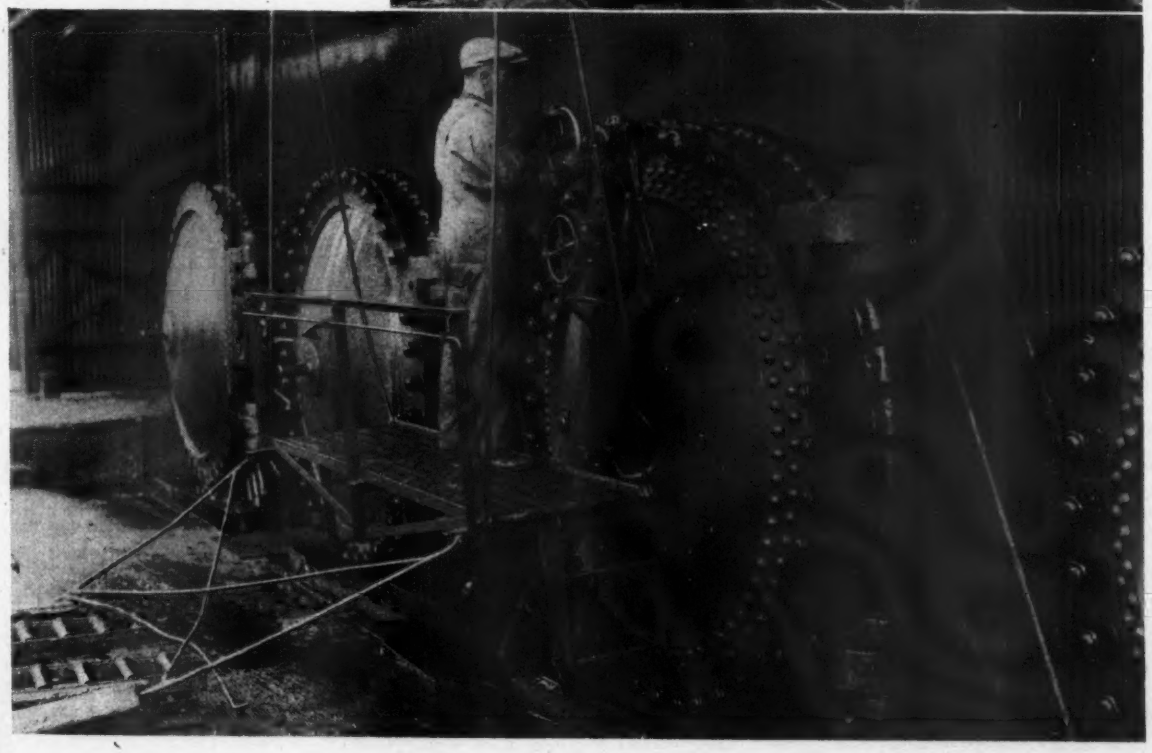
Cylinder doors are heavy and require special construction. Cylinders are 6 ft. to 9 ft. in diameter and 50 ft. to 135 ft. long



Fourteen million tons of coal had been hauled over this track in this 15-year period.

An unusual but quite serviceable track construction was used by Franklin County Coal Co., in the Royalton mine. A track diamond was laid on solid deck constructed of 5 x 12 15-ft. 6-in. creosoted oak timbers. Adjacent track was supported by 5 x 6 5½-ft. zinc chloride treated ties. After six years all timber and ties were sound.

Untreated ties in the same locations had been going out every 2 to 2½ years.

It is evident to most mine operators that the long time usage of main haulage tracks will give time necessary for economies of treated ties to materalize. Some operators have also found treated ties economical in less permanent workings. In the Franklin County Coal Co., Royalton mine, sawed hard wood 3 x 5 5½-ft. zinc treated room ties have been used and re-used several times in panels and rooms.

Re-Use of Room Ties Limited

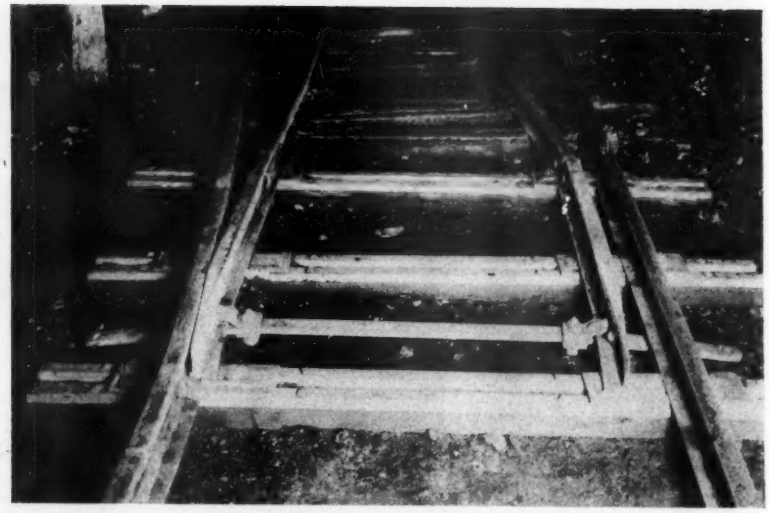
This re-use of room and panel ties is limited by the number of times spikes can be driven without "spike-killing" the tie. The ar-moored Tie was developed to meet this condition.

The "ar-moored" tie is constructed of a prefabricated, pre-bored pressure-treated oak base 2, 3 or 4 in. thick as required, to which a steel mine tie is secured with special bolts and grip nuts. This construction offers the advantages and best utility of both treated wood and steel ties in one unit, providing high capacity track for use where heavy and expensive mechanical cutting and hauling machines are used. Caterpillar tread equipment can be run over them without damage to ties. The wood gives stiffness preventing bending and distortion experienced with steel ties in moving and relaying track, and serves as "ballast" gripping the floor where laid on hard surface and offers depth required for tamping on soft floors. The steel tie serves as a tie plate preventing rail cutting and its clips eliminate need for gauge rods and provide for quick fastening of rail and ease of frequent moving and relaying of track. No loose spikes are required.

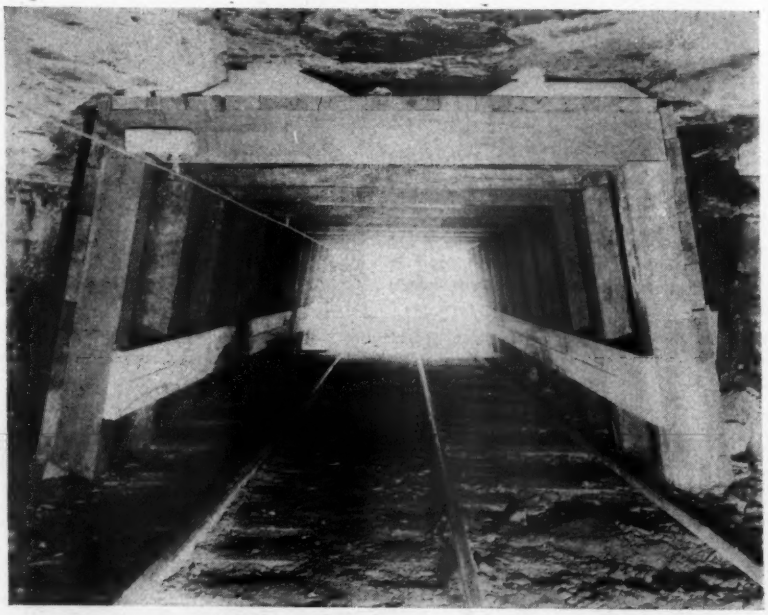
The "ar-moored" tie, protected against decay by the pressure treatment of its wood base, assures long service with resultant minimum maintenance and renewal, effects substantial savings in track costs, and makes stable "main line" track in temporary locations.

Engineers for one mine using these ties set up, in Table I, figures based on their experience:

Similar savings and additional safety can be realized by the use of pressure-treated wood for other purposes in and around mines as illustrated by the following installations:



"Ar-moored" oak switch ties offer a good solution to the switch alignment problem



Four-piece creosoted timber sets with creosoted lagging, guard-rail and ties

The roof support timbering in part of the Windber mine, even to the wedges, is pressure-treated. Had untreated wedges been used they would have soon rotted out.

In this same mine treated square sawn and preframed sets have been used with guard rails in the main haulage way. The preservation of these guard timbers is about as important as the treatment of the sets themselves. If the guard rails rot out and a car should jump the track a post might be loosened and knocked out, allowing the roof to come in.

The effectiveness of treatment is illustrated by a report on the use of zinc chloride treated props in the Silver Creek Colliery at Pottsville, Pa. Two treated sets were in service 24 years without decay while an untreated set directly between them was continually rotting out and was replaced several times. Untreated lagging also went to pieces rapidly.

Four-piece, treated, drift sets of sawn timbers and plank lagging used in the Consolidation mine were preframed and pressure-treated. The scabs were used to increase bearing area between cross bar and legs.

At another location in the Windber

Creosoted mixed oak trolley wire supports, preframed and bored, at an Ohio mine

A southern yellow pine timber set installed in 1931 is still sound

mine a high ceiling required two-story timbering. This type of construction could have been floored off on top of the lower cross bar and a separate airway provided if desired.

One mine used preframed pressure-treated sets but used untreated blocking and wedges above the cross bar. It was not long before fungus had started its work on the untreated timber and so the effectiveness of the timbering was reduced.

This installation was in a waterway tunnel where one leg of each set stood in running water. The record does not show what preservative was used. Pressure-creosoted treatment should be considered for such locations, as running water might leach out salt treatments in a rather short time.

The Hudson Coal Co. used round tunnel sets with round lagging and spacers between posts near top and bottom. All this round timber was pressure-treated prior to delivery to the mine. In this, as in other tunnels, trolley wire, light, and power lines were hung from the timbering. The use of treated wood assured secure fastenings for these wires. If wires are fastened to untreated wood, decay might soon loosen them and allow the wires to fall, short circuit, spark, and produce a dangerous condition.

The Zeigler mine used round southern yellow pine bars and legs treated with zinc chloride in their main haulage way to good advantage. Round timbers can be and should be framed prior to treatment whenever it is possible to determine lengths and sizes in advance of ordering material. Some operators standardize on size of tunnel sets, have them preframed, and when installing same fill out with treated blocks and wedges to fit variations of tunnel. After 8 years these round posts and bars were still sound and showed many years life expectancy ahead.

Zeigler also used round zinc chloride treated timber for a king bar supporting one end of 5 cross bars over a side entry with good results. Treatment insures retention of original strength of such important members. Decay would weaken untreated wood and develop a dangerous condition in but a few years. Treated timber can be expected to last 15 to 20 years, often the life of such side entries.

In supporting the trolley wire from cross bars and still providing clearance under the king bar, special brackets were used. These should certainly be treated to prevent the failure of the wood in brackets, which would allow the trolley wire to hang loose.

Where trolley wire is supported by the roof, it is common practice to drill holes and drive plugs, to which the hangers are screwed. The use of treated wood for these plugs is good practice.

Trolley wire guide and safety boards, in order to give the safety they are designed to provide over the life of the mine, should be pressure-treated for underground as well as surface use.

When caves occur, entailing high, long, complicated roof support, timbering is expensive. Much labor can be consumed in such construction in original installation. If the timber in such a structure rots, much more labor and more material must be used. This high cost maintenance can be avoided by the use of treated timber to support such caved roof.

In one case in Bell & Zoller's Zeigler No. 1 mine, the cave-in extended 31 ft. above the top of the rail and was quite long. A cross section of the structure shows concrete piers supporting 20-in. I-beams along the walls, with 18-in. I-beams across the three tracks serving as cross bars. Above this, a series of "sets" built of 12 x 12 framed plates, posts, and cross bars were used, each filled in and lagged to fit the surface of the roof with sawn cribbing. A man-way was left through the center of the structure to facilitate inspection. Treated timber was used throughout this structure.

In return air courses, the air is laden with moisture picked up in the mine, and is usually warm. If there is decayed wood in the mine throwing off spores (fungus seeds) these too are carried through return air courses making them very susceptible to decay. Frequently these air courses are idle, and are only entered for inspection purposes. This lack of disturbance aids decay (no plant grows well if disturbed much). It is very advantageous to pressure treat wood for these locations.

The more permanent brattices should be built of treated wood. One typical design used is tongue and grooved sheathing supported on posts. All material can be completely treated with chromated zinc chloride. For such work as well as for underground doors and door frames a quantity of 1-in. and 2-in. treated lumber could be kept on hand and framed on the job. Penetration obtained by pressure treatment amply protects such small sizes of lumber, making framing on the job possible.

Treatment for Surface Structures

In the surface workings of the mine, decay and in some instances termites are encountered. Pressure creosoted wood will prove economical for many surface structures to resist these destructive agencies.

Bin type cribbing to retain soil on banks have been built of preframed, prebored and treated timbers.

Framework of cleaning and screening plants could well be built of preserved and fire retardant wood. Roof trusses joined by modern timber connectors, prefabricated, and treated will prove worthy of consideration.

Piling and backing plank walls offer an ideal use for creosoted wood. These structures can be used along railroads, sides of entrance to mine, and for retention of low banks in general.

Bridges over depressed railroads or adjacent streams are long lived, serviceable and attractive structures when built of creosoted wood. Creosote treated piling or framed bents supporting a creosoted floor built of plank if desired or 2 x 6's on edge forming a laminated floor 6 in. thick, with chromated zinc chloride handrails painted white would make a very attractive and serviceable bridge.

Trolley support poles and roadway guard posts treated with creosote offer economical construction. These might be painted with aluminum or white sealer type paint to dress up the property without sacrificing long life.

Surface railroad tracks, often maintained by the mine, should be built on creosoted ties. This applies to both narrow gauge as well as standard railroad tracks.

Power poles, substation towers, and other transmission structures are permanent and economical when built of pressure-creosoted timbers.

Mine buildings, shops, storerooms, residences and offices frequently built without basements should have foundation posts, sills, joists, bridging and sub-flooring of first floor pressure-treated to prevent early failure due to termites or decay. Creosote treatment is ideal for all this work particularly if sealed off with resin paper before laying finish flooring.

Even the siding of such buildings could be given a creosote treatment, and cleaned up after treatment with a special "after-treatment" to remove excess surface creosote. Siding so treated requires no paint. The natural color of the creosote gradually fades to a rusty brown which is not unpleasant in appearance. Window and door trim and corner stripping might be CZC treated and painted for decorative purposes.

Floors and stairways in cleaning and screening plants are subject to decay. Repairs are expensive and bothersome but broken floors are hazardous. They can be prevented by using zinc chloride treatment for such applications.

For both underground as well as on the surface creosoted wood drain boxes are convenient and easy to install. Crescent Mining Co., of Peoria, Ill., has designed a simple standard plank box culvert for their use for this purpose. If desired the top of the box can be made of cross slats spaced to allow water to flow into the box.

Shaft Timbering

Shaft timbering is important and must be permanent. Preframing as mentioned above pays big dividends when specified for shaft timber. Most modern pressure treatment plants are equipped to cut, shape and bore timbers to specified size before treatment. Such work was done several years ago for the Sahara No. 10 mine. Each piece was cut, dapped, bored, and marked for identification, then pressure-treated. On arrival at the site, carpenters had only to assemble the parts. No cutting in the field was necessary. Such prefabrication assures preservative penetration of all exposed faces of the timber. Prefabrication should be specified whenever possible.

Prefabrication of mine car bottoms has been successfully carried out even for mine car maintenance. Planks were shaped and bored prior to treatment. The old rotted planks were removed from the cars and new parts fastened in place. With all holes prebored it was an easy matter to slip bolts in place and tighten them thus keeping labor costs at a minimum and providing protection against decay around bolt holes.

No Loss of Strength

Creosoted wood retains its original strength and resilience. Coal or ore being poured into and dumped out of mine cars continually wears and scrapes the surface of the car bottom. Sound creosoted wood lubricated by the oily nature of the creosote withstands this action much longer than untreated partially decayed wood. The cars are generally in the mine, the material hauled is often damp when put into the car and so the planking is subject to decay, the same as mine timbers. Some companies specializing in mine car building are offering cars built of pressure-treated wood.

Herein an effort has been made to give the basic purpose, method of treatment, and various uses of pressure-treated wood in and around mines and to point out some of its uses. Many uses have been overlooked or touched on lightly. The progressive mine operator, bearing in mind that properly preserved wood is a permanent construction material retaining the inherent properties of wood, namely: strength, lightness, and ease of working, will find many more diversified uses for treated timber on his property. The long life of pressure-treated wood, results not only in reduced maintenance costs but in greater safety and greater production.

Treating plant and seasoning yard at Newport, Del.

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Metal and Mineral Problems In War and Reconversion

Against the Background of Mining Industry's Enviable Record of Wartime Accomplishment, Termination of Government Controls and National Mineral Policy for the Future is Discussed

By PHILIP D. WILSON
Vice Chairman
Metals and Mining
War Production Board

IT is to me an especially great privilege to have this opportunity of addressing you. To come to the southwest is to return home, since the first 14 years of my active mining life were spent in the southwest. With headquarters in Bisbee, Ariz., I visited all the states and most of the mines represented here today, including those in northern Mexico. You will appreciate, therefore, that I am fortunate in having a hard rock background which gives me a sympathetic understanding of your problems.

Since leaving Arizona I have been engaged in mining in all parts of the world, in every continent but Australia. Before Pearl Harbor I was called to Washington to make a special study of our bauxite situation in the light of the huge new demands for aluminum, presaged by what then seemd to be our inevitable participation in a war which would largely depend upon aircraft supremacy. For more than two years my job in Washington was confined to the problems of aluminum and magnesium and there were plenty of them. Then a few months ago I was asked to take over for the War Production Board the supervision of all metals and minerals with the additional headaches they involve. By that time the heat was off the necessity for the expansion programs for raw material production. Increases in most areas had been tremendous. Of some metals and minerals productive capacity had been built up to supply more than realistic military requirements could use.

Unprecedented Expansion of Metal Output

The War Production Board policy has always been to screen as carefully as possible the requirement figures furnished by the armed services so that they represented as nearly as possible really essential needs. It was then our job to increase primary production and to build facilities capable of supplying those requirements finally agreed upon with the services. For instance, we expanded the aluminum system sevenfold to a production rate of over two billion pounds a year together with all the sheet mills, foundries, extrusion plants and other facilities necessary to fabricate that amount of primary metal. The cost to the Government of the enlarged aluminum system was roughly $1,000,000,000. As a result we have been able to build more than 240,000 airplanes. But to build them we have needed far less aluminum than was originally thought necessary by the Army Air Forces, with the consequence that a great many Government-owned aluminum plants have been closed down.

Similarly we expanded the production of magnesium to 80 times its prewar capacity, based entirely upon the services' requirement figures, largely for incendiary bombs and for aircraft, only to find that today we can supply the actual demand with just half the plants we had built. Tungsten, mercury, chrome, and other metals have had somewhat comparable histories.

However, in the cases of iron and steel and of the non-ferrous metals, copper, lead and zinc, it was unnecessary and in fact impossible to expand domestic production to such a degree. Where tariff protection was involved and foreign imports of needed metals under ceiling prices were restricted or virtually excluded, arrangements were made to waive duties for the period of the emergency. This measure has resulted in very large imports of many metals required for the war effort which would not otherwise have been available. The supply of the war metals would still have been inadequate if it had not been eked out by domestic production from many high-cost marginal mines, made possible by Government subsidies.

Premium Price Plan Has Operated Successfully

Of the several subsidy programs developed for the war, one of the most important and effective has been the premium price plan for copper, lead and zinc. In 1942 the Emergency Price Control Act was enacted by Congress which gave us the basis for our "hold the line" program in order to prevent to as great a degree as possible the price inflation inherent in the huge spending program necessary for a successful war. Ceiling prices were established widely. We may think that some of these were not set too wisely but it must be admitted that in the case of the metals the public was benefitted enormously. Most of the copper, lead and zinc has cost the war effort and us taxpayers less than half as much per pound of metal as they did in World War I, and, when the vastly greater amounts of these metals consumed in this war are considered, it is apparent that the saving can be measured in billions of dollars.

In order to hold the line and at the same time to assure the necessary supply, the premium price plan was devised whereby quotas representing fair average production rates under normal conditions were set for all operating mines. Premiums are being paid for new production, whether from newly-opened mines or from marginal ore-bodies in previously operating ones. With the exception of those initially assigned, quotas are subject to adjustment either upward or downward by the quota committee, as indicated by actual operating results and

An address presented to the International Mining Day Meeting, El Paso, Tex., November 10, 1944.

changes in conditions. The War Production Board and Office of Price Administration have equal representation on the committee. There has been remarkably little criticism of the quota committee's handling of the many delicate and involved problems with which it has had to wrestle and of the profit margins allowed to the operators. While a substantial portion of the metal production costs the Government much more than OPA ceiling prices, the net result has been that the average cost of domestic copper is today about 13 cents per pound, of lead 8 cents per pound and of zinc 11 cents per pound. By far the largest portion of the metals imported comes in under the ceilings of 12 cents, 6½ cents and 8¼ cents respectively, with, of course, duty waived.

Ample Warning in Event Higher Premiums Canceled

The premium price plan as extended after its inauguration in 1942 provided that the basic A quotas would not be cancellable before July 31, 1945, unless the national emergency were declared at an end before that date. Later when the higher B and C premiums were instituted to give necessary relief to the higher cost mines and to stimulate greater production, the right to cancel these B and C quotas and premiums upon 30 days' notice was expressly reserved. There has been much confusion in the minds of some people over this point and I feel that it should be clearly understood that this excessively high cost metal may be cancelled out with only one month's warning whenever it becomes entirely clear that it is no longer needed for the war. The War Production Board's responsibility under its charter from Congress is limited to the procurement of material to satisfy military and war supporting civilian requirements. It has no authority whatsoever to acquire metals or minerals for strategic or defense stockpiles for a future war, or for the purpose of conserving mineral resources or for other economic reasons. There is, therefore, no logical reason why the Governnment should continue to pay over 16 cents for zinc or 25 cents for copper when the time comes that there is sufficient metal available for war purposes at more reasonable prices. If that time should arrive before next July it is unlikely that the Government will adhere strictly to the 30-day cancellation privilege. A longer notice will most probably be given.

It is only fair and just that the miner should be given ample warning, for he has made for the mining fraternity in this war a proud and enviable record of cooperation and accomplishment. The statement has been made that we "had to take industry by the scruff of the neck and throw them into the war." If that was true, the instances were few and far between, and I must say, that my experience in the field of metals and minerals has been a far happier one. We have found not only willingness but an eagerness to cooperate and a profound and intense desire to spare no effort to bring forth the necessary production. Again and again I have called on industry, after explaining the task and the urgent need, to perform the impossible and with indomitable spirit, ingenuity and skill it has come through. The achievement of industry in the face of almost insuperable obstacles has been a great inspiration to me.

Although zinc is in somewhat easier supply today than it was a year ago, we still need high production of copper and of lead. The domestic supply of these two metals will be some 8 percent less this year than last, not because of any lack of willingness on the part of the operators, but wholly due to manpower shortages. Actually, productivity per wage earner has materially increased and the record is impressive in the light of a decrease from 30,600 men in the copper mines in January to 23,800 in August and in the lead and zinc mines from 18,700 to 15,400 in the same eight months. It is to be hoped that this manpower trend will change this winter as it has in past years or we may find ourselves in real difficulties with the intensified war effort which is obviously ahead of us.

Stockpiling Will Remove Menace of Postwar Surpluses

A few months ago the metal industries, looking into the future, were all deeply and rightfully concerned about the huge amounts of primary metal, of scrap and secondary and of disgorged pipe line material which will suddenly become available at the end of the war. Without wise disposition and proper control of these great surpluses, the immediate postwar result might easily be the wholesale closing down of mines and smelters and chaos generally throughout the metal industries. In the meanwhile, Congress has passed the Surplus Property Act which, while far from a perfect solution, has tended to allay those fears. The War Production Board under this act will continue to build up and to hold, through metals reserve, stockpiles of strategic and critical materials as insurance against war and essential civilian (or war-supporting) demands. Our policy in determining the size of such stocks has been to estimate and place in reserve amounts equal to six months' requirements of material which must be imported and to three months' requirements of domestically produced material. This general policy is subject to modification where special situations exist, as for example the case of tin where a stockpile much larger than that represented by six months' consumption has been deemed necessary.

The new act further instructs us to estimate and set aside amounts of strategic metals and minerals which will take care of any deficiencies of supply under requirements for non-war production for a period of six months. Any Government-owned material over and above these two reserves for war and civilian protection must be declared surplus and turned over to the Treasury. Furthermore, the Army and Navy Munitions Board has been directed to prepare estimates of the amounts of strategic and critical metals and minerals which should, in their judgment, be frozen into a permanent defense stockpile against another war. When this report has been approved by Congress, any material which may be held by the Treasury over and above the needs of the defense stockpile will be subject to eventual disposal under certain restrictions by the Surplus Property Board. Judging from the preview I have had of the Army and Navy thinking on the subject of defense stockpiles I should say that the menace to the market of material left unfrozen by the services if their program is approved will be unimportant. However, much may depend upon the Contract Termination Board's interpretation as to what constitutes Government property and as to how far back from the end product covered by a war contract toward the raw material source the Government's responsibility will extend.

As to the wisdom of maintaining large strategic material stockpiles for a future war, there are many divergent opinions. For many years before Pearl Harbor strategic stockpiles were discussed in Washington. Carefully prepared plans were in existence but the atmosphere built up by 20 years of peace and the widespread determination never again to become embroiled in war, prevented action. Only in 1939 was the first half-hearted attempt made to correct the woeful neglect of two decades with an appropriation by Congress of $100,000,000 for the acquisition of critical minerals. This sum was to be spent over a period of four years and was hedged about by conditions and red tape. As the war spread and loomed close to us in 1940 and 1941, it became increasingly difficult to obtain even the limited amounts of critical materials authorized. Shipping shortages hampered or prevented entirely the procurement of asbestos from Rhodesia, graphite from Madagascar, tungsten from China, and chrome ore from Turkey. When Pearl Harbor

came we plunged into an economy of scarcity and into an all-out procurement program regardless of the cost. It was only through indomitable determination and an excessive cost in dollars and delay that we finally emerged after two long tough years into an economy of sufficiency in 1943, insofar as most raw materials were concerned. We are going to finish this war with depleted natural resources and it is highly improbable that we would be able to repeat the miracle of 1941-43 if a future war should find us again in such a state of unpreparedness. Even a democracy to survive must provide an insurance policy against the future, no matter how distasteful the thought of still another war may be. The dollar cost of these proposed defense stockpiles will be infinitesimal in terms of the cost of this war and in terms of the future lives they might save.

Increased Imports Seem Necessary in Future Mineral Policy

This brings us to our national mineral policy of the future which should be given full and careful consideration now while we have so poignantly before us the inadequacies of our past policy. There is no gainsaying the obvious fact that this war will have skimmed the cream from our lead and zinc and even our copper resources. Premium prices have been necessary and they are playing a very essential part in assuring not only the cream but much of the very thin milk for our war requirements. After V-J Day our peacetime industrial economy built around the metals is going to make increasing inroads upon our dwindling domestic ore reserves.

It has been estimated that after the war our domestic economy, including manufacturers for export, may absorb annually 1,000,000 tons of copper and 700,000 to 900,000 tons each of lead and zinc. Our unsubsidized domestic mine production today represents only three-fourths of that amount of copper, 60 percent of the lead and only 40 percent of the zinc. Full wartime subsidized supply from domestic mines has not reached these figures except in the case of copper which was slightly more than 1,000,000 tons in 1942 and 1943. It seems most unlikely that the peak levels could be attained after the war without extremely high prices which would bring out very low grade submarginal ores.

To profit fully by a postwar era of full production and prosperity it seems inevitable that the country must resort to imports of metals to an extent that has never been necessary in the past. As regards zinc, we have increased the country's smelting and refining capacity for war needs, the increased capacity being largely dependent upon foreign concentrates. To keep these facilities operating at a rate to meet the indicated postwar need for slab zinc at moderate prices, continued imports of concentrates will be necessary to supplement domestic production. It is clear that our own mines cannot furnish for long enough zinc or lead or perhaps even enough copper to keep our economy in high gear. Imports seem to be the only answer.

Furthermore, we have constructed during this war an industrial plant capable of producing at least 50 percent more capital and consumer durable goods than ever before in our history. Our only hope of attaining Mr. Roosevelt's post-war objective of 60,000,000 jobs lies in virtually full operation of this plant. Its products cannot conceivably all be consumed within the United States. Greatly expanded export markets are necessary. Some economists are estimating that we should and probably will export after the war at least half as much again as our pre-war maximum. That would mean an annual export business of between 10 and 15 billion dollars, approximately the level of present exports. However, of the total of $14½ billions of exports in 1944, lend-lease will account for $11¾ billions. When lend-leasing ends how are we going to be paid for any such level of exports, which is going to be necessary to our continued prosperity and full employment? It has been suggested that we should accept in exchange raw materials of which we are now or anticipate that we may be in short supply, obtaining abroad increasing amounts of the major metals and petroleum, so that we may export finished products and to some degree conserve our own raw material

Pouring 3-notched magnesium ingots—the production of magnesium was expanded to 80 times its pre-war capacity to meet requirements of war services

reserves against future needs. Such a policy would mean drastic tariff changes and is an unpalatable dish to suggest to a group of miners. But is it not logical on both national prosperity and future defense grounds? The thought of the United States facing any future war as a have-not nation is even more unpalatable; it is terrifying!

History of War Controls Over Basic Materials Sketched

You have all heard rumors of the preparation of a plan by the War Production Board to facilitate the rapid partial conversion of industry from war to civilian production after victory in Europe. Before giving you some of the details of that plan it might be well to sketch briefly the history of war controls. Even before Pearl Harbor, in the days of the National Defense Advisory Commission and the Office of Production Management, it became necessary as our defense program got under way to requisition industry's stocks and reallocate materials to defense needs. At that time it was "business as usual," "guns and butter" and the policy was bitterly opposed by all those, and they were legion, who sincerely believed that we were not going to become involved and that to prepare for war was to encourage war. As shipping became scarce and supplies generally became tighter, it was still believed that there was enough for everyone. A simple priority system was initiated by the O. P. M. so that military requirements would come first and thus be assured of prompt supply. Effective at first, it soon degenerated into a welter of competition for higher and higher priority ratings. Those with low priorities got nothing. It became apparent that we had to choose between guns and butter. Orders limiting civilian uses were issued and conservation measures were put into effect.

When war actually came and with it new and astronomic requirements for raw materials, complacency and the business as usual attitude vanished. Imports of many minerals decreased sharply with the advent of the submarine and suddenly all emphasis was placed on the long delayed acquisition of strategic and critical minerals at any cost. The premium price plan was developed and put into effect in February, 1942, and many special contracts were placed all over the world for necessary minerals in short supply. A new production requirements plan, P. R. P., was inaugurated to better control the flow of materials by roughly gearing requirements to supply. While this was an improvement over the badly bogged down priorities system, it soon proved inadequate in the face of manifest shortages of equipment and manpower. Four thousand miners had to be furloughed by the Army to relieve the labor stringency which was limiting mine production.

But it was not until the Controlled Materials Plan in November, 1942, brought the three vital metals, steel, copper and aluminum into precise, measured, supply-requirements balance that chaos began to give way to order. C. M. P. was a momentous forward move after the several abortive attempts to regulate the war economy. All through the critical year of 1943, one of rapidly increasing production, and the present year of levelled off peak production, C. M. P. has functioned with a minimum of confusion in a period of material shortages. More recently, as some materials have passed into an area of surplus, conservation orders and limitations on civilian uses have been relaxed, always with the reservation that manpower, which cannot be employed in war jobs, must be available before civilian production is permitted. But the manifest advantages of C. M. P. have caused its retention, even in the case of aluminum, which is now relatively abundant.

WPB's Plans for Post V-E Day

In planning for post V-E Day (Victory in Europe) the War Production Board has assumed from the projected procurement cutback of the military that most materials and components will find themselves in free supply. It is proposed as of that day to abandon C. M. P. with a three months' runout period. It is planned to revoke the greater portion of the 471 Control and Limitation Orders, among them L-208, the Gold Mine Closing Order. Consequently civilian production will be permitted and encouraged on an almost unrestricted scale in order to effect rapid reemployment of the 4 to 5 million workers who will be released from war plant. It is proposed to revert to the simple priority system with which we started in 1941 but further reduced to one military band only. War and war-supporting production alone will be protected. Civilian goods manufacturers must scramble without priority assistance for the materials and components left over after the Army's and Navy's needs are satisfied. This will only work if the supply is abundant. Where military shortages develop the War Production Board will reserve the right to step in and schedule and allocate as before. In certain tight situations, among others tin, lead, nickel, petroleum, some chemicals, pulp and paper, lumber and certain textiles, controlling orders, according to the plan, will be maintained as long as the need exists. Scheduling control will probably be retained over some items of mining machinery both for capital account and for repairs and maintenance, in order to protect our coal and metal mine requirements against very large foreign orders that are looming on the horizon.

With regard to subsidies, the charter of the War Production Board restricts our efforts to the procurement of materials and supplies for military and essential civilian, or war supporting requirements only. When, after V-E Day with a sharp decline in military demand, there will be enough material left over after satisfying war requirements for a large slice of unessential civilian production the legal right and the propriety of the War Production Board's continuing to recommend subsidies have been questioned. It has been suggested that when ample supply of any material for war requirements is definitely assured, the authority to determine and recommend subsidies should be turned over to the Office of Price Administration, since Congress has assigned to that agency the responsibility for maintaining the civilian economy.

However, it has been agreed that just as long as subsidies are necessary for a substantial portion of the military requirements for any commodity, the War Production Board will continue to assume the responsibility for recommending subsidies for that material. Our present post V-E Day information indicates that copper, lead and zinc will fall into that category, so that there will be no change in the procedure of administering the premium price plan after victory in Europe.

But, by and large, after Germany has capitulated, the country will be returned by us bureaucrats as rapidly as possible to virtually its prewar free enterprise status with the proviso that production of military requirements for the war against Japan must not suffer. These requirements will continue as a backlog of some $40 billion a year which will in great measure protect the country's economy while the conversion of $25 billions of business from war production to peacetime pursuits is being accomplished.

WHEELS OF GOVERNMENT

As Viewed by A. W. DICKINSON of the American Mining Congress

THE returning "lame duck" Congress which will function from November 14 until the Christmas adjournment faces only a light calendar for legislative consideration. The Second War Powers Act, expiring December 31 of this year, will need to be extended as it is the source of the authority delegated to the War Production Board, War Manpower Commission, War Labor Board and numerous other wartime agencies. The Senate and House under the guidance of the leaders are also expected to take action on flood control and rivers and harbors bills, further suspension of the Social Security payroll tax increase, additional life for the Green Silver (Purchase) Act and a number of other matters.

It now appears that when the first session of the 79th Congress convenes on January 3 the House will be made up of 243 majority members and 190 of the minority in comparison with the present division of 214 majority and 212 minority. In the Senate the change is very slight. In neither the lower nor the upper house will the ratios of committee membership be disturbed and as yet there is no word of changes in the chairmanships of committees that are of particular importance to the mining industry.

Steel Wages and WLB

The War Labor Board's report to the President setting forth the relationship of wages to living costs did not reach the White House before election day, nor have any decisions been announced by the Board concerning the pending United Steel Worker's cases involving a guaranteed annual wage, vacations with pay, dismissal or severance pay, sick leave, shift differentials, geographic wage differentials, insurance plans and other matters. The demand of the AFL members of the Board that that over-all policy on the wage stabilization question be decided before consideration of the CIO cases, resulted in a pronounced disaffection within the Board in late October. Since this internal break AFL members have refused to sit with the Board and there are rumors undenied by Chairman Davis that he has tendered his resignation.

Coal Supervisors' Union

While the 73 coal mines taken over in the western Pennsylvania-West Virginia area as the result of the supervisory employes' unionization attempt are still in the hands of the Government, the controversy appears to have been ended for the time being with the dismissal (without prejudice) of the operators' injunction proceeding in the Federal District Court. Meanwhile hearings were begun in mid-October on issues in dispute between five western Pennsylvania coal companies and their supervisory employes, involving the fixing of working hours and shifts, and compensation for work in excess of eight hours per day; uniformity of wages; pay for overtime work; establishment of grievance machinery to adjust disputes between the employes and the company; uniform conditions of employment at the various mines of the companies; quality and tenure of employment; the establishment of a seniority program; holidays for supervisory employes; extra compensation for work on holidays and Sundays; compliance with Executive Order No. 9240, including double time for the seventh consecutive day of work; and payment of increases approved by the Treasury Department and the maintenance of proper differentials. The hearings which were held in Pittsburgh were suspended until November 13.

"Gross Income from the Property"

In California the U. S. Circuit Court of Appeals for the Ninth Circuit has reversed a decision of the U. S. Tax Court in which was involved the definition of "gross income from the property" under percentage depletion. In the case of quicksilver mining companies, the Bureau of Internal Revenue had ruled that in computing percentage depletion deduction must be made from gross income of "the cost of transporting, furnacing, condensing, cleaning, etc., in amounts agreed upon together with an assumed profit which was determined by applying to the total profits from sales of quicksilver the percentage which the cost of each operation bore to the total cost of all operations involved in getting the quicksilver to market." Robert M. Searls of San Francisco, attorney for the producers, demonstrated to the Court the lack of any market for crude cinnabar ore and asserted that furnacing of the ore is the equivalent of concentration by gravity or flotation process. In handing down its ruling the Court cited the amendment placed in the Revenue Act of 1943 by Senator Edwin S. Johnson of Colorado, which in defining "gross income from the property" specifies that furnacing of quicksilver ores is an ordinary treatment process. The Court further held that the Johnson amendment is a reaffirmation of the "intent of Congress" when percentage depletion was granted to metals in 1932.

This action of the California Court amply justifies the need for the Johnson amendment, as previously the Bu-

Washington Highlights

CONGRESS: Big election brings little change.

LEGISLATION: Calendar of House and Senate light for November-December.

WAR LABOR BOARD: In row over wage stabilization.

TRAVEL-TIME: Jewell Ridge Coal case to Supreme Court.

SUPERVISORY EMPLOYES: WLB panel holding hearings.

BONUS PAYMENTS: Premiums paid on copper, lead and zinc exempt from state tax.

FREIGHT RATES: Shippers ask further suspension of increases.

ST. LAWRENCE: Is project subject to treaty consideration?

reau had been pressing to cut down the amount of depletion granted by deducting cost and "proportionate profits" in the case of ordinary treatment processes such as cyanidation of gold ores and the furnacing of quicksilver ores.

Excess Profits Tax Relief

Stating that there are now tax refund cases involving approximately $3 billion and 30,000 claims under the excess profits tax relief provisions of Section 722, the General Counsel's office of the Bureau of Internal Revenue has released a Bulletin which is expected by the Treasury officials to be a real help to both taxpayers and Bureau representatives. In the Bulletin's Foreword the Commissioner comments that it is issued primarily for employes of the Bureau but that it contains information from which taxpayers may ascertain the current trend of opinion in the administration of Section 722. Warning that the material in the Bulletin does not have the force or effect of a public ruling or a Treasury decision, the Commissioner states, however, that its provisions will guide the administrative officers handling excess profits tax cases.

Tax services are now distributing the Bulletin and it will be available at the Government Printing Office about December 15.

Amortization Speeded

An Executive Order of September 30 transferred to the War Production Board the authority to issue "Certificates of Non-Necessity" which apply to war contractors' privately-owned plants and equipment. When possessing such a certificate the contractor may either speed up amortization or depreciation, taking the increased deductions against taxes, or present his claim for the unamortized cost of the facility under his contract termination settlement.

WPB is also authorized to amend "Certificates of Necessity" to correct descriptions of facilities and set forth their actual costs in cases where the original certificates were issued on an estimated basis. The issuance of "payment certificates" is also authorized where a payment has been made by the Government for the unamortized cost of an emergency facility because a contract has been terminated; the effect of these certificates being to make such payments tax-free.

Underground Travel Time

Counsel has decided to apply to the U. S. Supreme Court for a writ of certiorari in the Jewell Ridge Coal Corporation underground travel-time pay case. A decision given by the Fourth Circuit Court of Appeals on October 6 reversed the District Court's decision of January 5, and held that travel time in coal mines is worktime under the Fair Labor Standards Act. In a dissenting opinion on the Appellate Court's findings, Judge Soper stated that the District Court had found upon undisputed evidence that "by the universal custom and usage of the past 50 years and by agreement of the parties in every collective bargaining agreement that was ever made, it was universally recognized that in the bituminous coal industry travel time was not worktime." The dissent later states "that Congress could not have intended to compel mine owners to pay large increases in wages over and above those specified in prevailing agreements, and also to inflict upon the mine owners additional sums in the nature of a penalty by giving to the term 'work week,' as used in the statute, a significance contrary to that which by voluntary agreement and by long continued custom had prevailed in the industry."

Freight Rate Suspension

Hearings and oral argument closed early this month on the carriers' petition for restoration of the suspended freight rate increases (ex Parte 148, reopened), under which a revenue increase averaging approximately 4.7 percent was granted March 18, 1942, and suspended in the spring of 1943 until December 31, 1944. Opposing restoration of the rate increases were the OPA, Office of Economic Stabilization, War Food Administration and many shippers including meat packers, livestock men and others. The National Industrial Traffic League, representing a great many of the principal shippers, took the position that a further temporary suspension of the rate should be given until July 1, 1945, permitting a clearer determination of the effects of reconversion on rail earnings at that time. The railroads asserted that after the war, revenues will be insufficient to keep the properties solvent and to permit them to purchase the products of industries which will need orders for equipment and supplies from the railroads in order to carry on and furnish employment to large numbers of men.

St. Lawrence Seaway

Advocates of the St. Lawrence Seaway and Power Project have pressed for Senate action to the point where Senator Overton, chairman of the Commerce Subcommittee on the St. Lawrence project, has called an executive committee meeting November 15, to determine whether or not the matter is properly the subject of a treaty. Chairman Overton has also called for a hearing on November 20 at which proponents and opponents will appear on the treaty issue. It will be remembered that Senator Aiken (Rep., Vt.) has offered his St. Lawrence Project bill as an amendment to the rivers and harbors and the flood control bills, both of which are pending on the Senate calendar.

Bonus Payments—State Taxes

A Federal District Court in Utah has held that bonus payments made by Metals Reserve Company under the Premium Price Plan to producers of copper, lead and zinc are to be excluded from gross sales on which the State levies an occupation tax. In its reasoning the Court said "Now, what did Congress mean and intend when it authorized the payment of subsidies under the conditions specified in the Act. Was it appropriated for the purpose of relieving the buyers of the products or metals indicated from the payment of the market value of the metals in question?

"In that connection we must bear in mind that Congress has authorized the Price Control Administrator to make and fix ceiling prices on practically all articles in use in this country. In these cases the Administrator fixed prices at which these metals could be sold, copper for instance, at twelve cents a pound. Now these prices, whatever they may be in any particular case, we must presume were based upon a fair consideration of what would be a fair and just price to be received and paid for the article in question. Can we say that the fixing of the price of copper was a mere subterfuge on the part of the Administrator, and that the real price that he should have fixed, if he had been honest about it, was seventeen cents? Such a construction given to his acts would be to question his honesty, it seems to us. Twelve cents per pound for copper when it was fixed we must accept as the fair market value to be paid for this metal and to be received by the producer of it, and with respect to the bulk of the production in these cases the producer did receive and the purchaser did pay that price. Now the Government, for its own reasons, and without consulting the Legislature of the State of Utah or its Tax Commission, made these extra and additional payments, and the Congress called it a subsidy, which by its very terms means a gift from the Government to these producers. True when it is paid, it is money received and used by the producers, like they use any other money, and it might very well be that in the determination of income the courts, in the construction of an income statute, or the Congress in making such payment, may be held to have intended that the States, or the Government itself, should include that payment in the amount upon which income taxes should be assessed. But this is not an income tax. This is an occupation

(*Continued on page* 69)

3½-Inch Gardner-Denver Automatic Feed CF89H Drifter.
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3½-Inch Gardner-Denver Hand Cranked D89BH Drifter.
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Personals

Eugene McAuliffe

The Board of Trustees of the Union Pacific Coal Company has announced the elevation effective November 1 of **Eugene McAuliffe**, president, to chairman of the board. Mr. McAuliffe has announced the retirement from service effective November 1 of **George E. Pryde**, vice president of operation, and the promotion of **I. N. Bayless**, general manager, to president and general manager; also the promotion of **H. C. Livingston** and **Vernon O. Murray**, general superintendents, to assistant general managers. The positions of general superintendents will be abolished. In his new position, Mr. Bayless will also serve as a member of the Board of Trustees of the Union Pacific Coal Company and has been elected vice president and member of the board of the Union Pacific Water Company.

Geo. E. Pryde

I. N. Bayless

George H. Wigton, who formerly supervised the Getchell tungsten mill at Red House, Nev., for Metals Reserve Co., has been made mill superintendent for Getchell Mine, Inc.

Fred Knight was recently appointed to the position of superintendent of the Lake Superior-Holmes mine of the Oliver Iron Mining Company at Ishpeming, Mich. His appointment was effective October 1.

Judge John W. Haussermann, 76-year-old gold king of the Philippines, upon the return of **General Douglas MacArthur** to the islands is reported to have stated that he is ready to spend several million dollars to return his gold and timber interests there to prosperity. When Bataan fell he had some 10,000 Filipinos on his payroll as well as about 400 Americans.

J. Alden Bowers, chief of the Plans Section of the Solid Fuels Branch, Fuels and Lubricants Division, Office of the Quartermaster General, has been promoted to the grade of lieutenant colonel in the Quartermaster Corps.

John W. Sands, who has been with the Conservation Division of the War Production Board at Washington, D. C., since January, 1942, has resumed his duties with the Development and Research Division of the International Nickel Company, Inc., at New York, **T. H. Wickenden**, manager of that division of the company, announces.

Irving S. Olds, chairman of the Board of Directors of United States Steel Corporation, announced recently that **James B. Black** of San Francisco, Calif., has been elected a director of the corporation to fill the vacancy on the board created by the death earlier this year of **William J. Filbert**. Mr. Black thus becomes the first Pacific Coast director of the Steel Corporation. Mr. Black is president of Pacific Gas and Electric Company, San Francisco, and is prominent in Pacific Coast civic, philanthropic and industrial affairs.

James Thorpe, who has been with the Utah Fuel Company since 1911 and until recently was superintendent of the Sunnyside mine at Sunnyside, Utah, has succeeded **Walter Wetzel** as superintendent at the Castle Gate mine.

A. A. Jenkins has been named vice president of the Hanna Coal Co., as well as the Jefferson Coal Co.; he will continue to serve as general sales manager of the Ohio Coal Department of the M. A. Hanna Co.

Morris F. LaCroix, treasurer of the Copper Range Co. since 1940, was recently elected president of the company succeeding William H. Schacht who died September 29. Mr. LaCroix is a graduate mining engineer and was for several years associated with the Cleveland-Cliffs Iron Co. at Ishpeming, Michigan. He is also a member of Paine, Weber, Jackson & Curtis. **P. F. Beaudin**, a vice president of the company, succeeds Mr. LaCroix as treasurer. Mr. Beaudin has been associated with the company since 1930.

Chester O. Best was recently named vice president in charge of production for the Sierra Talc Co. of Los Angeles, Calif. The company has operations in California, Nevada, and New Mexico.

H. A. Glover, vice president of the Island Creek Coal Sales Company, was recently also named vice president of the Island Creek Coal Company.

Charles Roebling Tyson has been elected president of the John A. Roebling's Sons Company. Mr. Tyson succeeds the late **William A. Anderson**, who died on September 10, 1944.

Charles Roebling Tyson

The election of **Lt. Joseph M. Roebling**, now serving abroad with the United States Army Air Corps, as chairman of the Board of Directors of the company, was also announced. Lieutenant Roebling, first vice president since 1936, is a son of the late **Ferdinand W. Roebling, Jr.**, who was the company's president from 1926 to 1936.

Also announced, following the directors' meeting, was the election of **Archibald W. Brown** as treasurer and **H. D. Rathbun** as secretary and assistant treasurer.

Endicott R. Lovell, formerly vice president and general manager, Calumet & Hecla Consolidated Copper Co.,

Calumet, Michigan, has been elected president of the company to succeed Albert E. Petermann who died recently.

Leonard E. Adams of Salt Lake City, Utah, was recently named president and general manager of three Utah coal producing enterprises—the Royal Coal Co., the Spring Canyon Coal Co., and Standard Coal, Inc.

Philip A. Ray, metallurgist and flotation expert, has been transferred to the Denver office of Hercules Powder Company, it was announced recently by **G. F. Hogg**, sales manager of the company's Naval Stores Department.

In the future, all technical service for flotation plants and naval stores products in Colorado, Utah, New Mexico, Arizona, and Montana, will be handled by Ray from the Denver office.

Walter A. Furst has been appointed district representative in the Pittsburgh area for the Storage Battery Division of Philco Corporation, it is announced by **M. W. Heinritz**, vice president in charge of the division.

Col. W. J. German, who was manager of operations for the Pocahontas Fuel Company before he became commissioned as a colonel in the U. S. Army, has returned to Huntington, W. Va., and expects soon to receive his final discharge from the Army. He will continue with the Pocahontas Fuel Company in an advisory capacity.

L. C. Ilsley, well known electrical engineer, who did much pioneer work in testing and developing safer electrical equipment for use in coal mining, retired from the U. S. Bureau of Mines on September 30. He joined the Bureau in 1910 shortly after it was created and was assigned to research in electrical work in coal mining. He became chief of the Electrical Section of the Central Experiment Station in Pittsburgh, Pa., in 1919, and held this position continuously until his retirement.

Glenn B. Southward, mechanization engineer for the American Mining Congress, has been confined to his home for several weeks with an attack of pneumonia. We are pleased to report a steady advance in his recovery.

Due to Mr. Southward's illness we have been obliged to omit the usual report of the Coal Division from this issue of MINING CONGRESS JOURNAL.

Paul Beach is the new mine superintendent at the Rosemont Lease in the Helvetia mining district of Pima County, Ariz. Newton Wolcott was formerly superintendent.

L. E. Young, consulting engineer of Pittsburgh, Pa., went to London, England, recently on a special consulting job for the United States Government

regarding lend-lease. He is consultant on the rehabilitation of coal mine plants, part of the work of the Foreign Economic Administration.

Edward M. Lindenau has recently returned to this country, having been manager of the Minas Pampa Grande of the Hochschild interests in Bolivia. He now has a position as mining engineer with the U. S. Bureau of Mines at Salt Lake City, Utah.

S. F. Grone, who has been superintendent of the Staunton, No. 7 mine, Consolidated Coal Co., Staunton, Ill., has resumed his former position as head of the engineering department. **David Neal**, superintendent of the Mt. Olive No. 15 mine, Mt. Olive, Ill., will also be superintendent of the Staunton No. 7. The company has also announced that **Emil Haller** will succeed **John L. Shamblin** as manager of No. 7 mine and that Mr. Shamblin will become superintendent of Jefferson No. 20 mine in Nason, Ill.

Henry H. Ritchotte, has been appointed manager of the contractor's tool division of the Independent Pneumatic Tool Co., of Chicago. His department assists distributors of Thor rock drills and related air tools.

W. A. Conley recently resigned his position as mine superintendent for the American Smelting and Refining Co. in Mexico and has taken up residence in Tucson, Ariz.

— *Obituaries* —

Albert E. Petermann, 67, president of the Calumet and Hecla Consolidated Copper Company and chairman of the board of control of the Michigan College of Mining and Technology, died October 15 at Calumet, Mich. He was an alumnus of Cornell University and had received the honorary degree of LL.D. from the University of Arizona. Long prominent as an attorney, he was at the time of his death the senior partner of the legal firm of Petermann and McClelland, of Calumet. He was active in the work of the Michigan Bar Association, the American Mining Congress and the American Institute of Mining and Metallurgical Engineers. Of these organizations he was a staunch supporter, and devoted much time and energy also to the welfare of the Michigan College of Mining and Technology. He was appointed to its board in 1927, and became chairman four years later, succeeding the well-known mining engineer, William Kelly. Dr. Petermann's other civic services were many, and he was in great demand as a speaker and as chairman of citizens' groups. He served in the state legislature for two terms.

G. B. Livingood, advertising manager for the Traylor Engineering & Manufacturing Company of Allentown, Pennsylvania, died October 9. Mr. Livingood was also editor of the company's popular publication, "The Traylorian."

William D. Ord, 77, who devoted his lifetime to the coal industry of southern West Virginia, died October 8 at Alexandria, Va. He formerly operated the Empire Coal and Coke Co. at Landgraff, W. Va., and later served as an official of the National Coal Association. He graduated from Lafayette in 1887 and in 1917 he became chairman of the executive committee of the Pocahontas Operators Association, holding this office for 12 years.

Albert F. Short, 50, vice president of the International Coal and Coke Co. and the McGillivray Creek Coal & Coke Company, died in early September at Coleman, Alberta. He began employment with the McGillivray Creek Company in 1912 and was appointed secretary at the merger of the two companies in 1935, becoming vice president in 1940.

Lt. John K. (Jack) Childs, who prior to entering the air force was a salesman for The Tamping Bag Co., and who was reported missing in June, has now been reported killed in action.

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America's open pit mines and quarries have long felt the need for better electric shovel control — for the simplification of motor and motor generator design, and auxiliary control equipment with its complicated relays, resistors, and switchboard panels.

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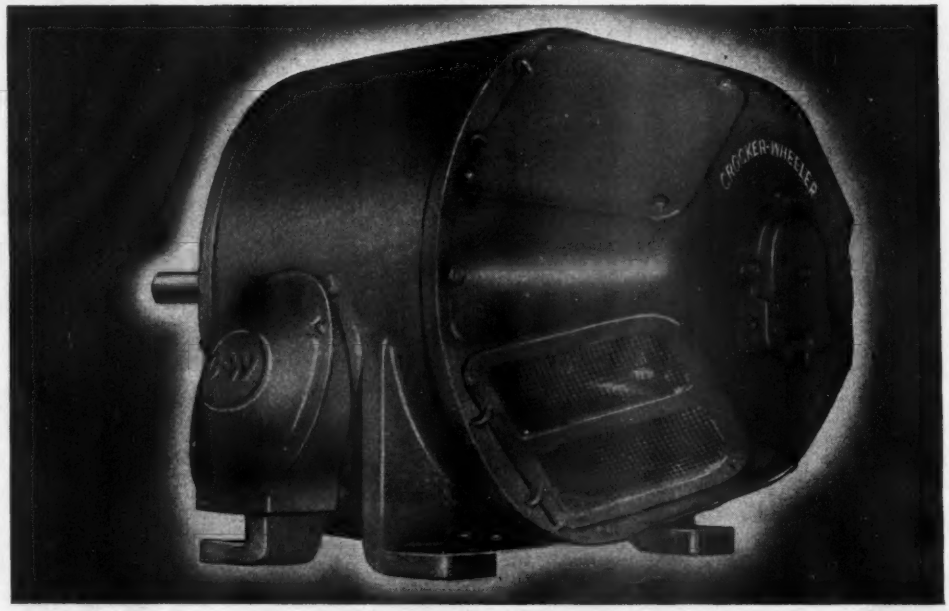
CROCKER-WHEELER POWER for the MINING INDUSTRY



Dripproof protected DC motor for use in underground installations.

CROCKER-WHEELER motors are ideally suited for the exacting demands of the mining industry from the working face to the preparation plant, mill or smelter . . . job tested and time proved underground as well as on the surface. Crocker-Wheeler AC motors up to 2400 volts and DC motors up to 550 volts are available in a large selection of enclosures: open type for general purpose application in most surface installations such as hoists, pumps, blowers and fans; dripproof and splashproof types for underground applications where drippings from mine walls or splashing results, such as on pumps or conveyers; totally enclosed and fan cooled types for use on wet or dry preparation plants, tipples, etc.

Crocker-Wheeler generators are available in a complete range of sizes, DC up to 5,000 kw and AC up to 10,000 kva, for steam turbine, diesel engine, steam engine or similar prime mover drives, and are designed for use in the mining industry. C-W resilient flexible couplings for direct connection applications are made to fit shaft diameters up to 8 inches.

In the mechanized mines of today, mining and preparation is virtually on a production line basis. This means that electrical equipment *must* operate successfully and continuously under tough conditions. Crocker-Wheeler builds motors with class "B" insulation that "take it". Field engineering offices are maintained throughout the country for free consultation on any motor, generator, control or coupling problem in the mining industry. Call on us today.

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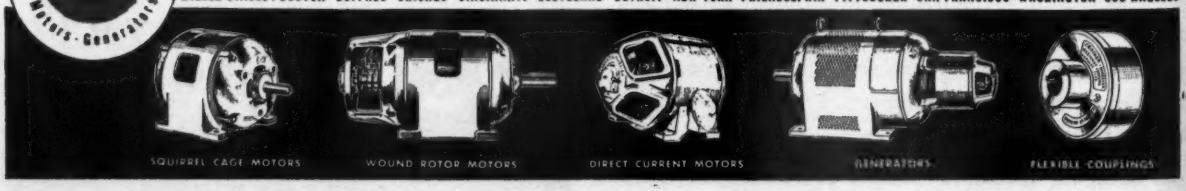


NEWS and VIEWS

The Innocent Bullet

Ephim G. Fogel

Once, in the rich red ore, it dreamed of forges,
Crucibles, anvils, shining tempered steels
On iron ships, on bridges over gorges,
On swerving rails and energetic wheels.

Conveyor of messages in singing wires
Seven times circling earth's indented crust,
Buoying on girders soaring silver spires,
Ending its days in honorable rust.

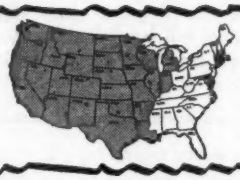
Not by its choice did it now bite through bone
Into the spongy lung and brittle spine.
Was it for this it was retrieved from stone
Deep in the rocky bowels of the mine?

Was it for this the white-hot metal trembled
Into the fatal mold, where it was bent
To help a madman plant his crooked emblem
Upon an anguished, ruined continent?

Betrayed the shining innocence of steel,
Builder of cities, peaceful engineer—
Betrayed, until the world destroys by steel
The twisted, brutal architects of fear.

—The Washington Post.

Eastern States



WEST VIRGINIA

»»» A mining extension class has been organized at Bartley by W. H. Steen, representative and instructor for the Mining Extension Department, School of Mines, University of West Virginia. Twenty-five have enrolled for the course. Meetings are being held each Monday evening at 7 p. m. in the personnel office of the Pond Creek Pocahontas Company. Several representatives from each mine and various departments of the company are attending. The first meeting took place on Monday, October 2, and classes will extend over a period of 34 weeks. Under the capable leadership of Mr. Steen, this work has been carried on in McDowell county for several years with a great deal of success. Training is received with much enthusiasm and satisfaction by those participating. The subjects chosen by the Bartley class for study are: haulage, timbering, drainage, mine gases, safety lamps, ventilation, mine fires and explosions.

PENNSYLVANIA

»»» A British commission, appointed by England's Ministry of Works, visited the anthracite coal mining area for the purpose of studying strip-mining methods. It was under the guidance of J. Robert Bagley, Pottsville, a prominent stripping contractor, who has just returned from his second trip to England where he advised the coal industry concerning American methods of stripping. Members of the commission were: Col. A. L. Mieville, Washington representative in the United States of the British Ministry of Supplies; Arthur Monk, Lancashire contractor; J. R. Casely, deputy director of operations, Open Cast Coal Production; A. Lord, technical adviser for the Civil Engineering Contractors Federation; Sir Malcolm McAlpin, of Sir Robert McAlpin and Sons, civil engineering contractors, and chairman of 85 contractors now engaging in stripping operations in England; L. Jacobs, labor representative, and H. Richardson, assistant director of the British Ministry of Work.

»»» The H. C. Frick Coke Company, operator of the recently opened Robena mine near Greensboro, Greene County, is getting ready to drill several core test holes in Greene Township, with work to be completed before the first of the year. Work is being done in connection with the development of the company's 67,000-acre coal tract, which will be developed and mined through the Robena shaft. Tests will be drilled on farms of Mrs. Cora Blaker, William Blaker, Vint Fordyce, Patterson Heirs, Ross Husk, Wilbur Hoskinson, Joseph Gormley and Samuel Lemley.

»»» A pioneer work-study plan, geared to aid employed college and university graduates who desire to obtain advanced degrees, began its 18th year in Pittsburgh recently.

Approximately 250 employes of the Westinghouse Electric and Manufacturing Company have started night classes which may lead to Master of Science or Doctor of Philosophy degrees in the fields of electrical engineering and business administration several years hence and will train them for leadership. Since the inception of the plan in 1927, in conjunction with the University of Pittsburgh, 108 students have received Master of Science degrees and seven have been awarded Doctor of Philosophy degrees.

»»» The accelerated demand for anthracite coal has resulted in dewatering several mines drowned out many years ago on account of the reduced demand for coal, or high mining costs. These pumping installations are now being made: dewatering the Buck Mountain 9th level of the Hazelton shaft, Lehigh Valley Coal Company, by means of a 2,000-g.p.m.

PETER F. LOFTUS
Consulting Engineers
ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY
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South Park Road, Library, Pa.

10th ANNUAL COAL CONFERENCE

★ ★ ★

Pittsburgh, Pa., December 14, 15, 1944

★

A TWO-DAY conference of the Coal Division of the American Mining Congress will be held at the William Penn Hotel, Pittsburgh, Thursday and Friday, December 14 and 15, 1944. It is the Tenth Annual Conference of this Division and all coal operators and manufacturers of mining equipment are invited to attend. This general meeting of the Coal Division committees is to correlate the numerous and varied studies which are being constantly made for the service of the coal mining industry.

Each committee will present its report, reviewing the studies that have been completed and outlining plans for future activities. All this will be presented for open discussion and suggestions from those present. The subjects which will be presented will deal with operating phases of "Loading Equipment," "Belt Conveyors," "Dust Abatement," "Mine Ventilation," "Roof Sealing," "Recovery of Fuel Values from Mine Refuse," "Safety," "AC Power Underground," "Revision of Track Turnout Standards."

The Conference begins Thursday afternoon with the meetings of individual committees. The Group Conference will commence at 10 A. M., Friday, and will be followed by the annual dinner at which a guest speaker of national prominence will talk on a subject of special interest to the mining industry.

pump; draining the Buck Mountain and Lykens Basins of the Spring Mountain Colliery, Payne Coal Company, requiring a 2,500-g.p.m. pump.

» » » Wartime production achievements of anthracite coal miners will be recognized by two Federal Government agencies and the United Mine Workers of America. This plan has been proposed by the Solid Fuels Administration for War, with the cooperation of the United States Maritime Commission and the endorsement of three anthracite districts of the union: Allocation of three Victory ships, one to each of the anthracite districts Nos. 1, 7 and 9; selection of a name for each vessel through an essay contest open to sons and daughters and brothers and sisters of U. M. W. A. members enrolled in grades six through twelve in public and parochial schools of the anthracite area; designation of the winning girl contestant in each district as sponsor of that district's vessel, and the winning boy contestant as her escort; appointment by each of the three districts of an adult companion for each of the three winning couples, who no doubt will be the wife of a miner; a launching in Baltimore in January with all expenses paid by the union districts 1, 7 and 9.

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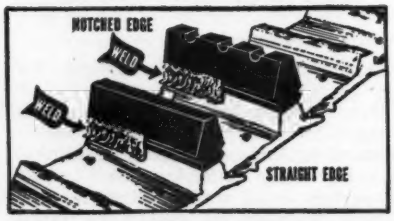
WITH BULLDOG
Grip-Lugs



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» » » Hearings were recently held by the Coal and Coke Committee Trunk Line Territory, on the proposal of the Reading Company to publish transit rates on buckwheat No. 4 and smaller sizes of anthracite moving from points on its lines to briquetting plants proposed to be built adjacent to the St. Nicholas and Locust Summit breakers of the Philadelphia and Reading Coal and Iron Company. These plants will have an annual estimated capacity of 500,000 tons of briquettes.

» » » Representative E. H. Wene, New Jersey, has introduced a resolution to the Committee on Rivers and Harbors to make a preliminary examination of the pollution situation of the Delaware River and its tributaries. The examination will involve methods whereby the pollution of the Delaware River watershed will be eliminated.

» » » The State Mines Department disclosed recently that 253 persons were killed in Pennsylvania mine accidents during the first nine months of 1944. This compares with 312 for the corresponding period of 1943. State Mine Secretary Richard Maize has attributed this reduction to the greater degree of safety exercised by miners and operators. He noted that during the year the Mines Department has been sponsoring meetings throughout the state to instruct in safety measures. "We are trying to bring about a reduction of accidents through these meetings and we feel that the efforts of the department to take safety to miners is having results." Mr. Maize pointed out that 126 of the fatalities occurred in the anthracite industry with 1 fatality to each 376,000 tons of coal produced. Bituminous miners working under less arduous conditions, were reported to have had 127 accidental deaths, with a ratio of one for each 871,000 tons of coal. The 1943 statistics showed 173 anthracite and 139 bituminous miners killed or 1 death for each 254,000 and 735,000 tons respectively.

KENTUCKY

» » » According to a recent report, the Royce-Kershaw Coal Co., Montgomery, Ala., will soon make its first shipment of coal from the Letcher-Harlan, Kentucky, area, where it will develop about 2,000 acres of coal land. Three good workable seams are said to be present. The mine will be one of the largest truck operations in the vicinity. Coal will be trucked to Cumberland, on the Louisville and Nashville Railroad, although that railroad has plans, it is said, for a 7-mile spur to the operation.

»»» Dr. B. F. Wright, Sam Bates, et al., of Whitesburg, Ky., are said to be preparing to open up an area of several thousand acres of cannel coal land in the Kings Creek and Line Fork areas in Letcher County, Ky. It is proposed at first to develop the mine by truck haulage altogether and a Federal road project to reach the area has been started.

»»» Jack Taylor, general manager of the High Splint Coal Co., High Splint, Ky., said recently that two mechanical mines would be opened by the company in the Darby seam. The company recently announced a $500,000 expansion program, one of the largest mine projects in Harlan County in several years. A new 5-track, all-steel tipple, a new office building will be constructed. The Kodell Construction Co., of Winchester, Ky., has the contract for the grading and track and is to start work immediately.

TENNESSEE

»»» The Sullivan Coal Co., of Knoxville, Tenn., has recently been organized to conduct strip mining operations near Soddy, Tenn. The company is headed by J. B. Sullivan, former engineer for the Tennessee Valley Authority. Plans call for the erection of a tipple on Soddy Creek to permit shipment by barge. Permit has already been applied for, to erect the tipple, and present plans call for the production of 500 tons of coal per day. The operators plan to employ power shovels, draglines and bulldozers in the stripping and coal loading operations.

ALABAMA

»»» Operations of the Franklin Coal Mining Company at its Powhatan Mine were recently resumed following the completion of a new tipple. The new structure replaces the one which was destroyed by fire a short time ago along with the entire preparation plant. Mine run coal will be produced until such time as a new washery is constructed. According to President R. T. Daniel, the output will be stepped up rapidly as the entire operating organization has been kept pretty well intact through employment in constructing the new tipple as well as in clean-up work during the idle period.

»»» The coal mining situation is rather tense in the Birmingham district, on account of the need for both domestic and industrial coal. The Sloss-Sheffield Steel & Iron Co., operating several furnaces and a by-products plant which furnishes gas and coke, both for its own plants and for domestic use, also operates its own coal mines. The demand for coal is so great that the company is reopening the Kimberly mine, which has been closed down for about 15 years. This mine was virtually abandoned when it was flooded by a break-through from the Cahaba River, but the company is now at work pumping the water from the mine and expects to have it in production in about a month. Capacity of the mine is about 600 tons per day. A major problem is where to get the manpower to operate the mine when it has been made ready.

The labor shortage is critical in the Alabama coal fields—and in some of the coal mining districts, a house-to-house campaign is on to secure the additional labor needed. This drive is backed by the United Mine Workers Union, the operators and the U. S. Employment Service, with the governor of the state lending his assistance.

Improved and modern housing facilities, provided by the coal operators, aid in the campaign to secure the additional help needed to speed up coal production.

Iron and steel production is being maintained at near top capacity, with only a few minor interruptions from strikes.

Plant Equipment Featured at National Power Show

Equipment for the control and distribution of power will be the feature of principal interest to visitors at the 16th National Exposition of Power and Mechanical Engineering, which opens in New York the last of November. The exposition dates this year run from November 27 to December 2, and it will be held in Madison Square Garden, where the last power show was held, two years ago.

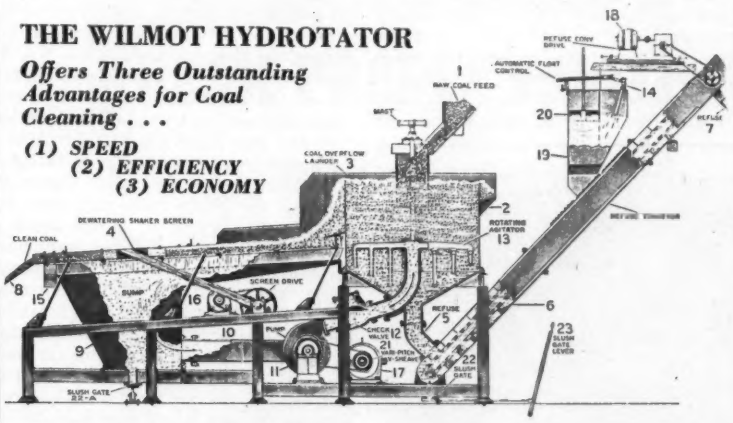
As in previous years, the exposition is under the sponsorship of an advisory committee composed of some 20 engineers whose leadership is nationally recognized in the fields which they represent. The show is conducted by the International Exposition Company, of which Charles F. Roth, manager of the exposition, is president.

With problems of plant reconversion and post-war planning crowding in on top of the major effort to provide ammunition and subsistence for the fighting forces abroad, manufacturing interests are deeply concerned with the administrative phases of production, whose driving force is connected power.

THE WILMOT HYDROTATOR

Offers Three Outstanding Advantages for Coal Cleaning . . .

(1) SPEED
(2) EFFICIENCY
(3) ECONOMY



The outstanding efficiency of the Wilmot Hydrotator is the result of the creation of a uniform upward current in and over the entire area of the separating tank, free from "dead" spots and "eddy currents."

In coal cleaning this performance is exemplified in the high cleaning efficiency and large tonnages handled in single units, at low operating and maintenance costs.
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A GREAT NAME IN THE COAL INDUSTRY

HYDROTATOR *Preparation* EQUIPMENT

WILMOT ENGINEERING COMPANY, HAZLETON, PA.

Central States

OHIO

»»» The Nordberg Manufacturing Company has acquired the controlling interest in the Northern Processing Machinery Company, of Cleveland, Ohio, a firm of specialty engineers which was recently organized to engage in the design and manufacture of basic materials processing machinery and plants. This new company will operate hereafter as a subsidiary of Nordberg Manufacturing Company under the corporate name of Nordberg Process Machinery Company.

The Nordberg line of mining, crushing, and screening machinery will be augmented to include many additional types of processing machinery as used by the alkali and heavy industrial chemicals industries; clay, bauxite, alumina, lime, cement, gypsum, chalk, pigment and granule plants; milling, calcining, sintering and smelting plants; crushed stone, sand and gravel plants.

Mr. R. R. Shafter, one of the founders of the Northern Processing Machinery Company, will continue as vice president and general manager of the new Nordberg subsidiary, with headquarters in the Lincoln Building, at 60 East 42nd Street, New York. Mr. Shafter has a broad background of more than 35 years' experience in this specialty field. Manufacturing will be centered in Nordberg's Milwaukee works.

Tipple crew coming off shift at Dun Glen, Hanna Coal Co., St. Clairsville, Ohio

»»» Tenth anniversary of the Twenty-Year Service Club of the B. F. Goodrich Company was celebrated recently when 292 employes received 10-, 20-, 30-, and 40-year emblems from John L. Collyer, company president. There were 245 pins presented 20-year employes, 46 to 30-year employes and one to a 40-year veteran, all of whom have had their service anniversaries during the last year.

ILLINOIS

»»» The mining electrical group of Southern Illinois recently enjoyed a combined talk and inspection trip at the West Frankfort Country Club with Joe Bailey, of the General Electric Co., Schenectady, N. Y., conducting. Mr. Bailey gave a talk on the history and development of types of mercury arc rectifiers and a description of the new 300 k.w. units at Old Ben Coal Corporation's Mine No. 15. This was followed by an inspection trip to see the set in operation and to look over various features of the station. The Old Ben Mine No. 15 substation is of the ignitron type and is installed in a building on the surface. Those attending the affair were told that the term "unit substation" is one which is applied to electrical power equipment installed in a single cubicle or series of cubicles bolted together to form an integral unit. Included in an installation would be the power transforming devices, indicating instruments and controls. The substation at the Old Ben Coal Corporation Mine 15 has two cubicles on the left, three cubicles on the right and a pyranol transformer between. It is also protected by a three-shot relay on the incoming power circuit breaker (automatically permitting three attempts to restart in case of power failure) and various other protective devices.

»»» The Chapman Coal Company, of which Ben Chapman is president, reopened the Glen Carbon mine near Collinsville, Ill., late in September. This was formerly a hand-operated steam power mine, which, since its purchase last March, has been transformed into an electrically powered operation employing underground mechanical loading. The company has spent about $35,000 on improvements in which are included the retimbering of the shaft, a new scale and a new office. The operations will employ between 60 and 70 men when production gets under full sway.

»»» The training department of the Allis-Chalmers Manufacturing Co., in cooperation with the Illinois Institute of Technology, has launched a new post-graduate educational course which will lead to a Master of Science degree in electrical or mechanical engineering, according to Lee H. Hill, vice president in charge of industrial relations.

The graduate course of instruction, conducted after working hours for the Allis-Chalmers employes, will be taught at the West Allis plant by professors of the Illinois Institute of Technology.

Hill said the Master of Science degree will be granted to graduate engineers after the completion of 32 hours of the approved curriculum, with a grade of "B" or better, and the writing of a satisfactory thesis. While the course will be open to any company employe with sufficient background to handle the studies, the post-graduate degree will depend upon approval of under-graduate work.

Preliminary registration found approximately 60 signing up for the courses, and it is expected more will register prior to the beginning of classes in October, Hill said.

Illinois Mining Institute Holds 52nd Annual Meeting

AN excellent program of technical papers, the regular business session and the annual dinner, gave members of the Illinois Mining Institute a full day on Friday, October 27. Arthur S. Knoizen, Director of the Mining Division, War Production Board, and chairman of the recent U. S. Coal Mission to Great Britain, spoke informally at the dinner on some of the problems encountered by his group during their stay in the British Isles.

The paper, "Rapid Belt Repairs" by Paul W. F. J. Moran, preparation manager, Pyramid Coal Corporation, Terre Haute, Indiana, covered the interesting details of a 1450-ft. rip suffered by the belt conveyor at the Victory mine recently. A jack pipe, riding the belt, became caught between roof and belt, point down, in such a manner that it actually pierced the deck plate beneath. The belt is 48 in. wide and is driven by a 250 h. p. motor. All but 50 ft. of the belt was ripped.

Six crews of five men each were put on the repair job and, with relief crews fully organized, the work was com-

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PROF. H. L. WALKER
JAMES WHITE

pleted in 30 hrs. Total cost of labor and parts for this job was $2,402, a remarkably low figure for the extensive repairs which so quickly placed a $20,000 belt back in service.

The "Work of the National Fuel Efficiency Program," by Thos. C. Cheasley, Supervising Engineer, National Fuel Efficiency Section, U. S. Bureau of Mines, presented many important aspects of a great problem. Mr. Cheasley referred to the importance of the competition which coal must meet from other fuels and noted the almost insignificant depletion of oil reserves in spite of increased wartime consumption.

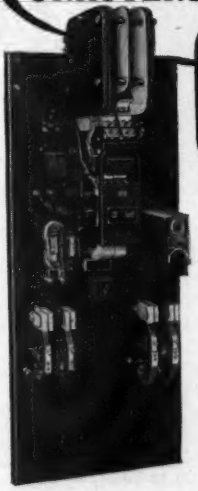
He further referred to our so-called "sinful" waste of coal throughout, from mine to consumer, and suggested improvements in handling, storage and uses. The program of his organization is widespread and mostly volunteer in nature but has gratifying savings to its credit. At the conclusion of his talk, Mr. Cheasley was presented with a certificate of cooperation by Governor Greene of Illinois. Robert L. Medill, State Mine Inspector, made the presentation.

"The Ignition Rectifier in Coal Mines" was ably and interestingly discussed by D. E. Renshaw, Mining Section, Industry Engineering Dept., Westinghouse Elect. & Mfg. Co. Mr. Renshaw covered the interesting beginnings of the ignitron rectifier, discussed pump types versus sealed tube installations and stated that 125 units were in use as of October 1, 1944. The first one was installed in February, 1937.

"Preparing Coal for War and Peace," by C. W. Waterman, Jr., Dist. Mgr., The McNally-Pittsburg Mfg. Corp., Chicago, with discussion by N. L. Davis, Mgr., Materials Handling Machinery Div., Link Belt Co., Chicago, offered much food for thought. These papers not only brought out the salient features of new developments in coal preparation, but pointed strongly to the urgent need for maximum mechanization and best possible preparation facilities in the coal industry if it is to meet the ever-increasing competition from other fuels.

The final paper on the program, "Experimental Coke Ovens for Research with Illinois Coals," by Frank H. Reed, Chief Chemist, State Geological Survey, Urbana, Ill., was very informative. Pointing to the estimated 150,000,000,000 tons of metallurgical coal available in the state and to the needs of industry, he showed several slides of the furnaces his department has built and experimented with and indicated some highly useful results. He noted the need of uniform coal in oven feed and called for care in preparing coals for metallurgical operations. He further advised that final coking characteristics are predictable only through experiment.

PEAK PRODUCTION
with
UNATTENDED SUBSTATIONS



Type KSA Circuit Breakers help produce record tonnages

Efficient substations mean more production by eliminating time losses resulting from disturbances on feeder circuits. This is true of the semi-automatic station which is attended only in starting and stopping and of the full-automatic station which requires nothing but rare, periodic attendance.

I-T-E has had more experience in the application of d-c circuit breakers in mining distribution systems than any other group, and our engineers will be glad to tell you how we can aid production.

I-T-E
Representatives in Principal Mining Areas
CIRCUIT BREAKER CO.
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TRI-STATE

»»» A new field shaft has been put down to the 85-ft. level in the Aurora mine area by the American Zinc, Lead and Smelting Company, according to an announcement by John J. Inman of Webb City, district manager of the company. The company completed a modern concentration plant on the Hunter land in 1943, and the new shaft is located on the adjacent Werdein land. A derrick hopper, from the Smith-Henckel operations of the company (MINING CONGRESS JOURNAL, June and July, 1944), southeast of Duenweg, is being moved and reconstructed over the new shaft.

WISCONSIN

»»» The recently completed bore hole at the Cary Mine at Hurley is now being enlarged to its final size of 13 ft. by 21 ft. The bore was completed to a depth of 2,500 ft. by the Newsom shot-drill method to serve as the pilot hole for the final shaft. The bore hole direction stayed within the limits of the proposed shaft throughout its course. In stripping down the bore hole for the final shaft, the work was started at the surface, blasting the rock into the bore hole and drawing it off in a special pocket below.

MICHIGAN

»»» Calumet and Hecla recently paid 62,768 shares of its stock for the lands of the Keweenaw Copper Company. The purchase includes all of the property and assets of the Keweenaw company, except cash, listed securities and Government bonds. It is reported that the board of directors of the Keweenaw Copper Company has declared a liquidating dividend of ¾ share of the capital stock of Calumet and Hecla and $1 in cash for each share of stock of the Keweenaw Copper Company.

Acquisition of the 34,544 acres of Keweenaw Copper Company land still further broadens Calumet and Hecla's holdings in Keweenaw County. The lands adjoin the Calumet and Hecla land on which considerable exploration for copper has been conducted in recent years.

»»» Peter Kiewit & Sons Company, active in stripping operations at mines in the Lake Superior district, was recently awarded a stripping contract to remove approximately 2,000,000 cu. yds. of earth and rock overburden on the north bank of the Plymouth open pit iron mine near Wakefield, Mich. The mine is operated by Pickands Mather & Company. It is also reported that due to the large new pit development campaign being conducted at the Plymouth, no shipments will be made during the season of 1945.

One of the interesting features of this mine is the use of balanced skip hoisting for taking the ore from the pit. Total vertical lift here is over 300 ft.

NORTH DAKOTA

»»» The 1943 annual report of the coal mine inspection department of the state of North Dakota, of which J. B. Crowe is coal mine inspector, reveals the following data: 2,694,000 tons of lignite coal was produced from 20 counties in 1943. There are 73 underground mines and 111 stripping mines in the area, which employ 879 miners and 533 additional personnel; 603,441 tons of the coal was used locally, and 2,019,024 tons were shipped.

The mines in this territory vary from small operations employing improvised, home-made equipment to those employing large, modern power shovels, with corresponding haulage equipment. The Truax-Traer Coal Company is the largest producer in the North Dakota lignite field and is the company which introduced strip mining practice there.

MINNESOTA

»»» Robert E. Wilson, resources and rehabilitation commissoner for the iron ranges, recently announced that plans are under way for exploratory drilling to determine the commercial possibilities of the titaniferous magnetite in Minnesota. Frank F. Grout, director of the Minnesota Geological Survey, proposed the project. While most of the known deposits are in Cook County a few are known in St. Louis and Lake Counties. Calls for bids will be made this fall in the hope of having the drilling under way before winter. Several paint manufacturers are reported interested in the project.

»»» A portion of the underground mining area at the Spruce mine of the Oliver Iron Mining Co. at Eveleth, Minnesota, will be stripped in the near future. The change involves removal and replacement of mine buildings and a lowering of the shaft collar 70 ft., according to reports. It is also said that the headframe will be re-erected next spring at the new elevation. The present hoist will serve the new set-up.

Above is a Sauerman Scraper machine with 10 cu. yd. bucket handling a 200,000-ton stockpile on a semi-circular area 400 ft. in radius. Machine's capacity is 400 tons hourly, storing or reclaiming.

In his station overlooking stockpile, operator has "push-button" control of entire operation, including travel of tail tower seen in background.

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CUT COSTS!

AT mills, smelters, open pits, strip mines—in fact wherever there are problems of stockpiling or excavating, Sauerman Crescent scrapers are daily demonstrating their ability to dig and haul large tonnages at costs of a few cents per ton.

The secret of "Crescent" efficiency is in the streamline design of this unique scraper. A Crescent bucket penetrates hard-packed materials with ease, and requires less line-pull than any other type of scraper.

Moving back and forth at a speed of 300 to 600 f.p.m., loading and dumping automatically, a Crescent Scraper, operated by a Sauerman improved hoist, is the most productive one-man machine for handling materials.

Write for catalog and see for yourself how others have cut costs by handling their materials with Sauerman equipment.

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Western States

COLORADO

»»» The Bradley Mining Co. of California, which conducts extensive operations in California and Idaho, has taken over the option of Earl F. Crowl to operate the famous San Juan Gold King mine near Silverton. It is reported that the company will start extensive operations as soon as supplies are available, workers can be secured, and WPB Order L-208 has been rescinded. The entrance of the Bradley Mining Co. into the Colorado San Juan marks further extensive acquisition of San Juan property by large interests in anticipation of better days ahead for gold and silver mining, as well as metal mining in general. The Bradley Mining Co. will carry out the operating requirements of the option, formerly held by Earl F. Crowl.

The Gold King comprises about 150 acres located in Gladstone, near Silverton, San Juan County. There are six other claims in the Gold King group totalling 55 acres, adjacent to the Sunnyside mine. Included in the Gold King property is a mill and tramway.

The gold in the mine occurs free in white quartz associated with iron pyrite, galena, or sphalerite as fissure veins in andesite that carry irregular stringers of lead-copper ore with gold and silver values. The property has been developed by a 700-ft. shaft and a 3,000-ft. tunnel. The west vein has been opened on the 700-ft. level and is reported to be 75 ft. wide. The mine is credited with a net profit of $6,081,279 in the period 1895 to 1919, with $1,750,000 paid in dividends. The gross output for the same period was about $12,000,000.

WYOMING

»»» The Union Pacific Railroad has purchased 35 new coal burning locomotives from the American Locomotive Company at a cost of $10,000,000, it has been announced by W. M. Jeffers, president of the railroad. Ten of the new engines will be used for passenger service and 25 will go into high-speed heavy freight work. Five of the new locomotives are to be of the U. P. 4000 class, 4-8-8-4 type designed especially for heavy freight service. They will operate between Ogden, Utah, and Green River, Wyo., where 20 of the same type are already in use. These are known as the "Big Boy" locomotives. The remaining 20 new freight units will be of the U. P. 3000 class, 4-6-6-4 type high-speed Challenger engines to augment the 85 already operating in Wyoming. The passenger units will be of the U. P. 800 class, 4-8-4 type, to augment the 35 which the railroad has in use between Omaha, Salt Lake City and Pocatello, Idaho.

NEW MEXICO

»»» The New Mexico School of Mines opened its fall and winter term with an enrollment of 35 regular and special students, President R. H. Reece has announced. Evening classes have been added at the school. A unique development at the college this year is the inclusion of the study of aerial photography in the work of the Department of Petroleum Engineering, a new departure in geological surveying. Also, a four-year course in Civil Engineering has been added to the curriculum.

»»» Louis S. Cates, New York, president of the Phelps Dodge Corporation; Wylie Brown, New York, vice president, and A. E. Holden, Detroit, president of the Essex Wire & Cable Company, visited the Phelps Dodge Burro Mountain mine at Tyrone, where large copper leaching operations have added to red metal production since the outbreak of the war.

»»» "Post-War Employment by Mines" is the subject of a survey and report on New Mexico submitted by the Mines Committee of the Post-War Planning Board for Grant County, of which Ira L. Wright, is chairman, and Frank H. Buchella, C. A. Schmidt and Joseph H. Taylor are members. The report is comprehensive and its findings are summed up as follows: "The mining industry is unable to commit itself to a definite employment policy following the war. Without exception, mining company managers are unable to say whether they will want more men or will be compelled to release the present employes. Employment in the post-war period by the mining industry, perhaps more than any other industry, depends on the policy pursued in the disposal of surplus war materials."

UTAH

»»» Seven of the first ten women workers hired a year ago, October 10, at the Magna mill, division of the Utah Copper Co., were honored with a birthday cake.

It is reported that a total of 257 women workers are now employed in the Magna and Arthur mills. A. C. Ensign, Magna superintendent, and Roy Hatch, Arthur superintendent, have vouched for their efficiency at many jobs. Their accident and attendance records are excellent.

Those honored on their completion of a year's work were: Mrs. Lilly Dew, Mrs. Helen Gust, Mrs. Ardella Knight, Mrs. Carol Matson, Mrs. Leone McGill, Miss Jean Marlor and Mrs. Claudine Potter. They work at such jobs as tool room attendant, timekeeper, sampler, clerk, janitoress.

It is said that 170 women are working in the mine at Bingham Canyon as switch tenders, tool room attendants and train operators.

ARIZONA

»»» Fire that destroyed the electrolytic tank house of the Inspiration Consolidated Copper Company, Inspiration, Ariz., on October 1, causing damage estimated at $1,000,000, failed to halt the production operations of the company. Through the use of a "dual process," the company's operations are at a normal level. Copper ore is placed in a sulphuric acid bath

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

OF THE MINING CONGRESS JOURNAL, published monthly at Washington, D. C., for October 1, 1944.

City of Washington,
District of Columbia, ss:

Before me, a notary public in and for the state and county aforesaid, personally appeared B. C. Wilkerson, who, having been duly sworn according to law, deposes and says that she is an associate editor of THE MINING CONGRESS JOURNAL, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, editor and business manager are:
Name of publisher, The American Mining Congress, Washington, D. C.
Editor, Stanley A. Trengove, Washington, D. C.
Business manager, P. D. McMurrer, Washington, D. C.

2. That the owners are: The American Mining Congress—a corporation, not for profit. No stockholders. President, Howard I. Young, St. Louis, Mo.; Secretary, Julian D. Conover, Washington, D. C.

3. That the known bondholders, mortagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

B. C. WILKERSON,
Associate Editor.

Sworn to and subscribed before me this 3rd day of October, 1944.

ELSIE L. LEISHEAR,
Notary Public.

(My commission expires December 31, 1948.)

and the copper is leached. Instead of going through the electrolytic process, the ore moves to the iron foundry where the metal is separated. It will require six months for the company to secure materials and rebuild the lost unit, it was said. Origin of the fire was not determined.

»»» Re-equipping of the Crown King, Tiger, Saratoga, and Philadelphia properties in Yavapai county, near Prescott, has been announced, with special attention to be paid the Crown King, for zinc, copper, lead, and some gold. Plans also have been made to reopen the Wild Flower mine.

»»» Continuation of the construction of mine access roads and steps toward the reopening of gold properties are postwar plans already put into effect by mining men in Yavapai and Cochise counties, respectively. Proposed reopening of gold properties has special interest in the vicinity of Tombstone, southern Arizona mining camp often labeled "too old to die," and one of the state's largest producing regions of precious metals in past years.

»»» Purchase of a flotation mill by S. S. Bocharnikov, Russian government engineer, is reported in Phoenix, Ariz., by the Independent Pipe and Machinery Company, the mill to be shipped in late October.

»»» The Coronado Copper and Zinc Company is laying a nine-mile water pipe, and will erect seven tanks and ore bins on property near Willcox. Pipe being used in the new water line was originally manufactured for the army's "bazooka," and is being welded in 36-foot lengths, coated inside and out with asphalt, it is reported.

NEVADA

»»» The 1000-ton plant of the Manganese Ore Company at the Three Kids Manganese Mine, Clark County, was closed on September 30, by order of the War Production Board. The order is said to have released some 525 men from the Manganese Ore Company's payroll. A recent announcement, credited to Secretary Ickes, said that the plant would be converted to employ an electrolytic process. WPB has announced that abundant stocks of manganese ore are now on hand and are being supplemented by shipments from foreign sources.

»»» On October 3 Nevada presented over two thousand silver dollars to members of the crew of the Battleship "Nevada." Many of the silver dollars were minted at Carson City, when this state was one of the big silver producers of the nation. Some unidentified person made the suggestion to the governor, E. P. Carville, who made it a statewide affair, and dollar contributions were made from all parts of the state.

To give it additional mineral atmosphere, employes of Basic Magnesium, Inc., made a chest of pure magnesium, into which the silver dollars were placed.

Nevada citizens are very proud of the record of the battle-wagon which bears the name of the Silver State, so the presentation was made to Lt. J. F. Kievit, a Nevada-born officer on the "Nevada," who will take it back to his ship soon, and supervise distribution of the silver dollars to each member of the crew, including officers. The "Nevada" is now undergoing repairs on the east coast.

»»» A concentrator and power plant being installed at the Mount Hope zinc-lead-cadmium mine near Eureka, which is controlled by the Callahan Zinc-Lead Company of Idaho and New York, is expected to be ready for operation about December 1. Much of the machinery is being shipped from the Duquesne mining unit near Patagonia, Ariz., a Callahan organization recently shut down. The Mount Hope is an old property of the famous Eureka district, but it had not been operated for many years. It is reportedly leased from the Columbia Steel Company.

»»» There is considerable speculation in Goldfield over drilling operations between the old Goldfield Con. mill ground and the Alkali Springs Cutoff. There are 30 claims in the group, which are owned by the Resurrection Mining Co. The claims were selected by M. Milstein, New York geologist.

The area is assumed to cover the drift of wash and erosion from the rich hills of the Goldfield mining district, which is credited with a production of about $130,000,000 during the lively days of the camp. The theory back of the project is thought to be the possibility of finding placer gold concentrated somewhere along the course of the wash.

»»» Basic Magnesium is expected to cease operations in Nevada toward the end of November. The chlorine plants however may continue until the first of the year. Employment at the BMI plant at Las Vegas has been reduced at an average of about 100 men a week. On October 1 employes totaled about 1800, and it was expected this would be reduced to 700 by January 1.

Production of magnesite and brucite at Gabbs valley ceased about September 1, and milling was completed about the 15th. A crew of less than 70 men remains as guards, etc. All members of the technical staff have left. There are reported to be millions of tons of magnesite awaiting treatment in post-war years.

IDAHO

»»» The Lucky Friday Silver-Lead Mining Company early in October shipped 1700 tons of lead-silver ore to the Golconda custom mill, from which was recovered three carloads of lead concentrates and one carload of

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. . . the CORRECT rope for your mining equipment
■ Internally lubricated
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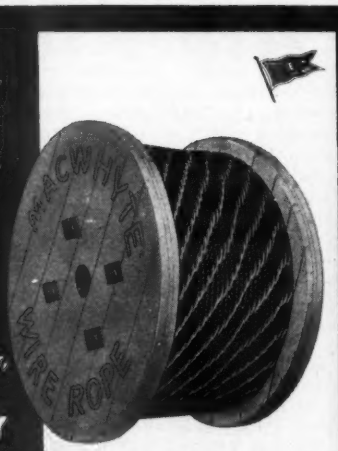
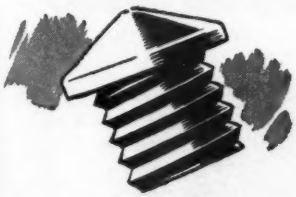


MONARCH Whyte Strand PREformed . . . Macwhyte's best grade wire rope . . . famous for its strength, toughness, and internal lubrication.
NO. 725-M

Typical of the exhaustive field tests which marked the development of the modern, high speed Cummins Diesel, was the gruelling 14-day grind which came to an end on Christmas Day, 1932, at the Indianapolis Speedway. Here, under AAA supervision, a Cummins-powered Indiana truck set a non-stop distance record for trucks: 14,600 miles (5,840 laps of the 2½-mile oval!).



The injector cup wiper is an inconspicuous part of the Cummins Diesel, but its development made a conspicuous contribution to the Cummins Diesel's efficient and economical performance. This patented cup wiper, perfected only after countless modifications in piston design, eliminates carbon on the injector cup, creates additional turbulency, assures more complete combustion.

Metallurgy plays an important role in the Cummins Diesel trend to ever lighter, stronger construction. Example: 5,000 samples were analyzed in selecting the cast iron for the block—a foundry was rebuilt and its methods completely revised—but the increase in tensile strength from 20,000 to 50,000 pounds per square inch more than justified the cost.

CUMMINS DEPENDABLE DIESELS

Automotive Models: Designed for all types of heavy-duty trucks in either highway or off-the-highway service.

★ ★ ★

Industrial Models: Portable and stationary engines, power units, and generating sets for service in any industry requiring heavy-duty power.

★ ★ ★

Marine Models: Propulsion engines and marine type generating sets designed for all types of fishing boats, work boats, and pleasure craft.

Spade Work

The diesel's higher thermal efficiency was proved many years ago . . . but it took the builders of Cummins Diesels to prove that diesel engine weights and dimensions could be brought within practicable limits. They proved it in 1932 with the original high speed diesel . . . proved it after 14 years of intensive "spade work" in the refinement of lubrication, cooling, metallurgy and many other aspects of design and construction . . . proved it by putting diesels in equipment and on jobs where diesels had never worked before. Today, you will find diesels in virtually every automotive, industrial, and marine service that requires heavy-duty power . . . and if you look closely enough, you'll find a very large proportion of those diesels are Cummins Dependable Diesels.

CUMMINS ENGINE COMPANY, INC., Columbus, Ind.

zinc concentrates. Preliminary assays at the mill indicated the lead shipments contained 196 ounces in silver and 61.6 percent lead per ton. Preliminary settlement for 85 percent of the lead was paid by the American Smelting & Refining Company and the ore was shipped to the company's East Helena plant. No assay was made of the zinc car, which was shipped to the Sullivan zinc plant at Kellogg. The ore was mined from Lucky Friday's 800 level, where the company has developed a shoot of ore about 250 ft. in length. The east end of the shoot has produced the high grade ore; the west end is more or less broken up by local faulting. The company is now preparing to sink another 200 ft. to the 1000-ft. level before installing permanent equipment. The mine is owned by a local stock company of about 300 stockholders and has paid its own development expense from ore shipments, including the purchase price of the property.

»»» The Blackbird Mining district in Lemhi county, Idaho, is reported by Idaho School of Mines geologists to be the best known area in the United States in which to prospect for cobalt minerals. The mineralized area is large, according to Alfred L. Anderson, geology professor of the Idaho school, and contains veins of gold-copper-cobalt material which carry from one to three percent cobalt mineral and are up to 20 ft. in width. The Uncle Sam Mining Company, with headquarters at Salmon, Idaho, is the only operating company in the district. Between 1939 and 1941 this company produced gold, silver and copper concentrates valued at $224,272.73. The cobalt content of the ore was not recovered.

»»» Stanly A. Easton, president of the Bunker Hill & Sullivan Mining & Concentrating Company at Kellogg, recently addressed a meeting of the Coeur d'Alene Chamber of Commerce in Coeur d'Alene city, during which he said that free enterprise has been responsible for growth and prosperity in this section of the country, and told of plans being made by the mining industry for the post-war period and the contribution it hopes to make in giving jobs with fair wages to returning servicemen.

»»» The Surprise shaft of the Highland-Surprise Mining Company in the Pine creek district west of Kellogg is being continued from the 500 to the 700 level and now has about 150 ft. of the work completed. The formation is Prichard slate but is a thin bedded variety compared to the thick bedded slate commonly known as Prichard. If the present deep development is successful the company plans a vertical shaft to service both the Highland and Surprise mine. The production from both properties is now about 300 tons per day.

»»» Federal Mining & Smelting Company has repaired the old narrow gauge railroad grade connecting No. 5 tunnel and the mill to convert it into a truck haulage road to handle ore from the Haugh & Kinsella lease in the upper workings of the Morning and You Like mines.

»»» David E. Bell is driving a new 700-ft. development tunnel on the Champion mine property at Mackay, Idaho. The mine is now producing about 25 tons of lead-silver ore daily from upper levels.

MONTANA

»»» Montana School of Mines resumed its regular freshman engineering course starting November 1, it was announced by Dean A. E. Adami, vice president of the school.

Resumption of the course for ci-

ALABAMA BY-PRODUCTS CORPORATION INSTALLS 16 *SuperDuty* TABLES

Alabama By-Products Corporation, for its new Praco Plant, installed SuperDuty Diagonal-Deck Coal Washing Tables exclusively for cleaning finer sizes. Sixteen of these modern money-saving tables are now in operation.

This installation is further evidence of SuperDuty supremacy. Leading coal mine operators are demanding the increased daily output of marketable coal at a savings of many hours of critical time and labor.

Users are reporting negligible upkeep . . . power required is substantially 1 H.P. under full load operation . . . high quality materials and perfectly balanced construction give extra years of efficient operation. Each machine backed by 38 years of engineering "Know-How."

For complete details about this record-making, economical table, write for illustrated Bulletin No. 119-A.

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vilian students has been made possible, Dean Adami said, through general curtailment in quotas of all Navy V-12 units in the nation. The school took up the accelerated Navy V-12 training course as a contribution to the nation's war effort in July of 1943. Reduction of the number of Navy V-12 students to be enrolled for the next term, which started November 1, makes it possible for the Butte school to offer its regular first-year engineering study.

"A large enrollment is not anticipated at this time," Dean Adami said, "but sufficient inquiries have been received at the school from Montana students and from out-of-state students to justify resumption of the freshman engineering studies. If there is sufficient demand later it may be that work will be offered also in the upper branches of the engineering course."

Graduates from accredited high schools or other preparatory institutions are eligible for enrollment in the freshman engineering course.

The School of Mines vice president said that 16 weeks will be devoted to each course until July 1, after which it may be necessary to return to the regular semester course program.

CALIFORNIA

»»» Between 40 and 50 tons of tungsten ore are being produced daily for treatment in the 50-ton gravity concentration plant of the Consolidated Tungsten Company near Duckland in Drum Valley. J. D. Spittler, general manager of the company, has a crew of 24 men working. It is planned to drive the new tunnel through the mountain to improve ventilation and to develop the ore body.

»»» The Blue Star Mines, Ltd., at Bigpine, Inyo county, is reported to be producing between 900 and 1000 tons of talc and limestone monthly. Ernest Brazil, general superintendent, has a crew of 16 men working.

»»» The Iron Duke gold mine, near Hornitos in Mariposa county, has been taken over by Grover Kihorny. He has purchased the necessary pumping equipment and dewatering is expected to be completed in about a month. The mine employs a crew of from five to seven men.

Wheels of Government

(*Continued from page* 53)

tax upon the gross sales of these metals by these producers, and who are paid money as a subsidy by the United States."

Now pending before the Montana State Supreme Court, the case of the Klies Mining Company has previously been the subject of a similar ruling before a State Court.

Mine Leasers—Employment Tax

Supplementing a ruling by the Commissioner of Internal Revenue that "leasers" engaged in working portions of a mine owned by a mining company are considered to be independent contractors and not employes within the meaning of Title VIII and IX of the Social Security Act, the industry now has a further ruling from the Federal Security Agency as follows: "In a memorandum dated December 7, 1943, we advised the Bureau of Old-Age and Survivors Insurance of the Social Security Board as to the effect to be given to the decision in the Empire Star Mines Company and Combined Metals Reduction Company cases. Our position differs from that of the Bureau of Internal Revenue only in that the application of the decision is restricted to the 9th and 10th Judicial Circuits which, as you know, include the States of Washington, Oregon, California, Montana, Idaho, Nevada, Wyoming, Utah, Arizona, Colorado, New Mexico, Kansas and Oklahoma."

Thus on block-leasing there now appears to be no material difference between the attitude of the Federal Security Agency and the Bureau of Internal Revenue except in the area of application.

SUPPLY YOUR SHOT-FIRERS BAGS TO TAMP WITH

and they will do a better job of bringing down coal. They can seal their shots easier, quicker and better—getting the ultimate in shot control with a greater degree of safety. Mines now using SEALTITE TAMPING BAGS have decreased tamping time and powder costs by increasing tonnage with more effective shooting.

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TAMPING BAG COMPANY
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MANUFACTURERS FORUM

New Pipe Gage

The Three-Point Gage Co., 3821 Broadway, Chicago 13, Ill., announces a completely new model of the three-point pipe gage which will now measure instantaneously not only all

sizes of pipe from ⅛ in. to 12 in., but all sizes of electrical conduit and metallic tubing (thin-wall tubing.)

This gage is pocket size and consists of two pivoted steel plates with edges curved at three points for contact with the pipe or tubing to be measured, together with scales which automatically register standard sizes of electrical metallic tubing (thin-wall tubing) and conduit, and also the correct sizes of pipe in terms of inside measurement. A third scale shows the right drill size for tapping.

It is claimed that it is necessary to contact only a small section of the pipe or tubing contour and that the gage will measure in any position, even against the wall or in a corner.

New Heating Torch

A new medium-weight heating torch has been announced by the Air Reduction Sales Company. This new torch (Style 9802) is especially designed for concentrated localized heating such as is required for bending, straightening and shrinking of steel plate as well as for silver-brazing of heavy copper plate in the manufacture of copper pipe. The torch is said to be lighter in weight than heating torches that have been available in the past yet it has equal gas capacity.

Five new multi-flame acetylene heating tips as well as two multi-flame propane heating tips are available for this torch. These seven tips will meet the requirements of every heavy heating job.

Three mixers are available for the torch, viz., for positive pressure acetylene, low pressure acetylene and for propane. The available extensions include a 12-in. straight extension and 18 in., 24 in., and 42 in. angular extensions.

Information is available from the manufacturer, Air Reduction Sales Company, 60 East 42nd Street, New York 17, N. Y.

New Construction

Roberts and Schaefer Company, Chicago, Ill., announces the following contracts:

Gay Coal and Coke Company, Mt. Gay, West Virginia—Stump Air-Flow coal cleaning plant to clean ¼" x 0 slack, capacity, 40 tons per hr; plant to be in operation December 1.

Feds Creek Coal Co., Inc., Harman, Virginia—Complete steel tipple to be built near Nigh, Pike County, Kentucky, consisting of car feeder, rotary dump, coal and refuse bin, retarding conveyors, marcus tipple and loading booms, capacity, 500 tons per hr. for preparing lump, egg and slack and in the future lump, egg, pea and slack; the plant to be completed April 1, 1945.

New Flashlight Battery

A rechargeable wet flashlight battery for industrial use built on the principle of the automobile wet storage battery, especially valuable for operations where long continued and steady usage of flashlights is necessary is announced by The B. F. Goodrich Company, Akron, Ohio.

New type wet cell batteries placed in tests in its Akron factories 18 months ago are still giving excellent service, the company reports.

It is claimed that the wet storage batteries are more economical than dry cells when flashlight service is required in volume; or where batteries require replacements more than once every two weeks. The batteries give the same light as the industrial type dry cells. A freshly charged wet battery will give about three hours of constant light. Batteries can be used in the standard three or five-cell dry battery case with the use of spacer plugs.

Substantial savings when the wet batteries replace the dry cells is one of the big advantages of the new type battery which will outlast the life of 400 dry cells, the company claims.

The new wet battery requires a special type Mazda Lamp, which comes in 1.9 volt; .6 ampere of screw base and flange base design. This is a 600 mil lamp as contrasted with the 300 mil lamp used with dry batteries. Actual wattage consumed with the wet battery is 50 percent more than with the dry type and since light is directly proportional to watt consumption the wet batteries give a distinctly brighter light than the older type. The light is constant, since the voltage drop between a full charged and discharged wet cell battery is only .35 volts; the dry cell drops approximately a full volt. This assures constant top quality light at all times the wet cell light is being operated, according to announcement.

The company sells the complete recharging equipment, together with tester, as part of the program.

M. S. A. Awarded Army-Navy "E"

Rear Admiral C. H. Woodward, USN (Ret.), of Washington, D. C., chief of the Incentive Division of the U. S. Navy, was the principal speaker at the award of the Army-Navy "E" to Mine Safety Appliances Co., Pittsburgh, Sept. 16. Admiral Woodward presented the "E" pennant. Awarding the "E" pins to M. S. A. employes was Lt. Col. Robert C. Downie, chief officer, Pittsburgh ordnance district. Mr. George H. Deike, company president, accepted the Army-Navy "E" on behalf of M. S. A. employes.

Mine Safety, world's largest commercial producer of approved safety equipment, is one of two Pittsburgh concerns to hold both the Army-Navy "E" and the Maritime "M." Only 25 companies in the entire country have been awarded both honors. M. S. A. has a 4-star Maritime "M."

New Trolley Guard

The Mosebach Electric & Supply Company, 1152 Arlington Avenue, Pittsburgh 3, Pa., has recently developed a new inexpensive trolley guard support in order to minimize electrical injuries underground.

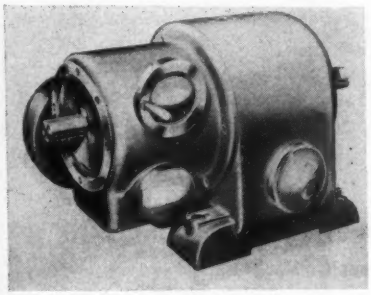
The new product, known as Mesco Trolley Guard Support, is designed to grip the trolley wire as illustrated. It is made of ⅛x2-in. steel, in two pieces, and held together by ⅜x¾-in. carriage bolts. The supports are lead-coated to prevent rusting.

It is recommended that the supports be placed four or five feet apart. The rubber is then placed over the supports, forming a guard over the wire and warning anyone getting against the guard.

Coal delivered to a cleaning plant by a rubber conveyor belt driven by a Westinghouse gearmotor. Compactness and ability to withstand heavy duty service and to operate in a dust-laden atmosphere are special requirements for drives for this service

New Variable Speed Drive

The new Lombard variable speed drive is reported to be filling a long-felt need in the processing industries with the transmission of power at different speed levels. Said to be particularly adaptable because of its compact size and streamlined design to practically every type of variable speed transmission work, this new drive, by the Lombard Governor Corporation of Ashland, Massachusetts, is reported finding ready acceptance in the modernization of present equipment as well as on new equipment.



Pumps, blowers, heavy stock conveyors and machinery power in the processing field are already using this type of equipment. The convenience of an individually-controlled drive for each machine is readily understood. Danger of tie-up due to the slipping of belts from the overhead drive is said to be eliminated, as well as a general stoppage from a temporary power failure.

New Coal Conveyor Belts

Goodyear Tire & Rubber Company officials have disclosed that the company's new line of conveyor belts for coal mines, announced last spring, will be known as "Coal-Flo" belts. W. C. Winings, manager of Goodyear's Mechanical Goods Division, said the "Coal-Flo" belts are being produced expressly for use on standard, sectionalized conveyor equipment used in mining operations.

Two principal features of "Coal-Flo" belts are mildew resistance, achieved with an exclusive mildew inhibitor, and acid neutralization. According to report, the acid-neutralizing ingredient is compounded in the belt covers and carcasses, remaining active indefinitely under mild acid conditions and lasting for years under so-called "bad" acid conditions in coal mines.

In addition, a breaker strip is provided in the "Coal-Flo" belts between cover and carcass to provide maximum cover-to-carcass adhesion as a protection against stripping hazards sometimes found in coal-mine uses of conveyor belts. It was also stated that the standard "Coal-Flo" belt consists of five plies of 28-oz. duck. On the basis of experience gained from installation of hundreds of thousands of ft. of coal mine belt, this type was said to have proved to be the "best-balanced" in fastener holding strength, troughability, rollability, weight, bruise resistance, cost, longevity of service, and other factors.

Announcements

The men and women of Macwhyte Wire Rope Company of Kenosha, Wisconsin, received their third Army-Navy "E" award on October 7, 1944.

* * *

The Wickwire Spencer Steel Company has announced that on October 2 the general sales office of the mechanical specialties division was moved to Clinton, Massachusetts, where the products of this division are manufactured. The mechanical specialties general sales office had been previously located at 500 Fifth Avenue, New York 18, New York. A district sales office of this division will continue to be maintained at the New York address.

CATALOGS AND BULLETINS

AIR COMPRESSORS. *Schramm, Inc.*, West Chester, Pa. A mining bulletin covers all this company's portable and stationary compressors recommended for mining work.

BIT DRESSER. *Bucyrus-Erie Co.*, South Milwaukee, Wis. A 24-page bulletin describes the No. 8 and No. 12 blast hole bit dressers, diagrams efficient shop layouts and shows bit furnaces, quenching tanks, bit handling cranes.

FORGEABILITY OF STEELS. *Timken Roller Bearing Company*, Steel and Tube Division, Canton, Ohio. A 78-page book, containing recommended forging temperatures of 68 steels, as determined by the hot-twist test conducted in the company laboratories. The apparatus and procedures used are described and the results of tests on various steels interpreted. A free copy of the book may be obtained upon request.

MAGNETIC SEPARATORS. *Stearns Magnetic Mfg. Co.*, Milwaukee 4, has issued a new Bulletin 81-A on magnetic separators for selective separation and concentration, and applicable particularly to the mining field. Described and illustrated are the Stearns Wetherill Type "R," or cross-belt magnetic separators; Stearns Ring Type "D" Magnetic separators; Stearns Type "MD" magnetic separators; Stearns wet Type "MW" magnetic separators, and Stearns inverted Type "MWI" magnetic separators, also for treatment of wet material.

MINE BLOWERS. *The Jeffrey Mfg. Co.*, Columbus 16, Ohio, Bulletin 783 describes and presents performance data on Aerodyne Midget Blower, Type "61" Blower, Universal Blowers and Exhausters, Aerodyne Junior and Types 8L Fans, and Types 8H or 8M Aerodyne Mine Fans.

WELDING. *Lincoln Electric Co.*, Cleveland, Ohio. A 48-page booklet "Fleet-Welding," describes a new method for increasing the speed of welding mild steel. Use of "arc force" to obtain greater penetration and required weld strength is brought out. Seventeen separate tables are included to cover butt welds, fillet and lap welds, and corner welds.

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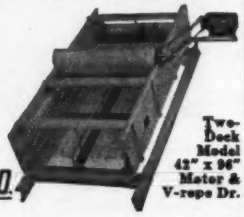

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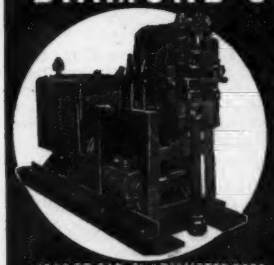

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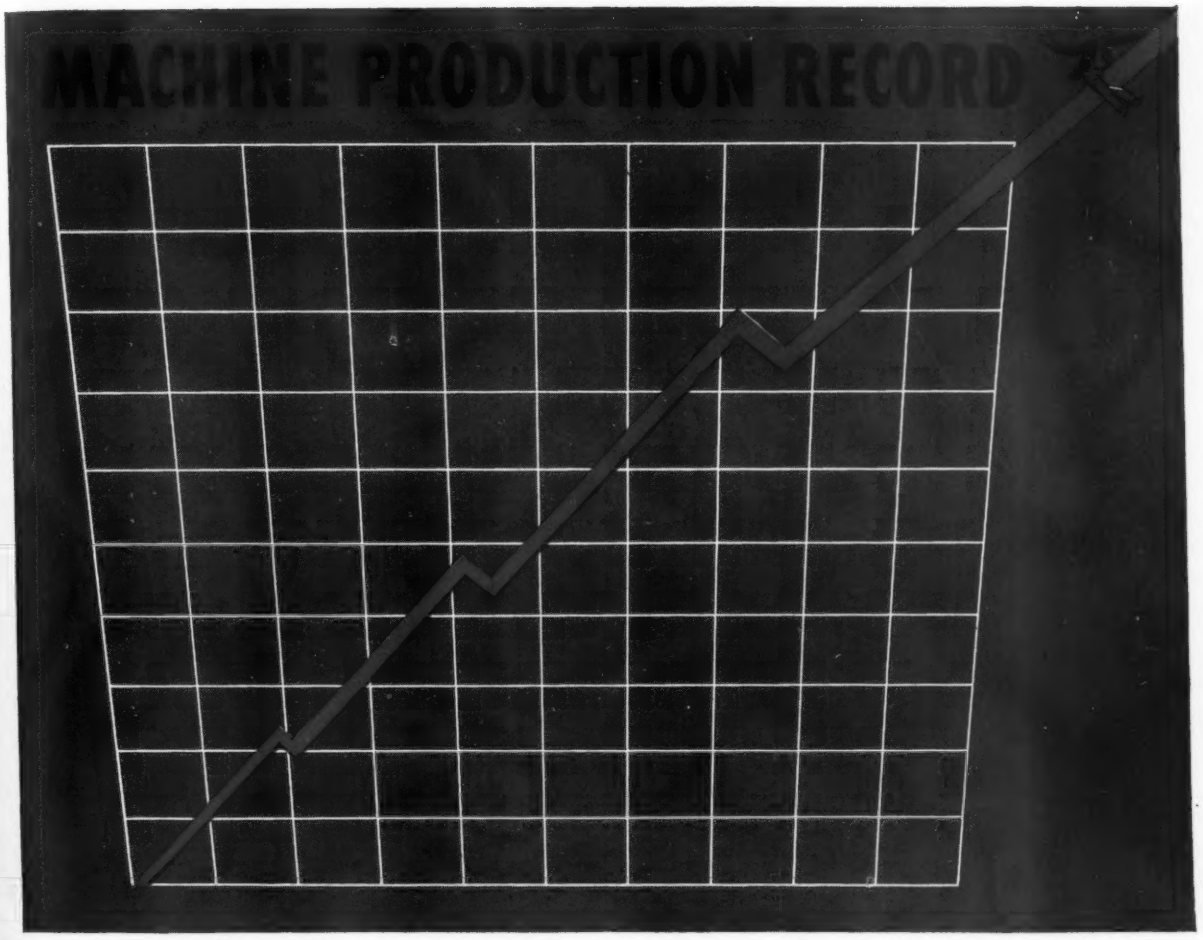

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